

The ^{Date 7-5-47}Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 117, No. 7

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CHICAGO, ILLINOIS

AUGUST 16, 1941

SOME PRINCIPLES OF MEDICAL ETHICS APPLIED TO THE PRACTICE OF OPHTHALMOLOGY

CHAIRMAN'S ADDRESS

ALBERT C. SNELL, M.D.
ROCHESTER, N. Y.

Since my election to the chairmanship of this section, I have received considerable correspondence with reference to certain questionable practices of ophthalmologists in the dispensing of ophthalmic lenses. Also there has appeared in a high class nationally distributed magazine a critical and informative article setting forth principally those practices which are no credit to the profession. The time, therefore, seems opportune to examine some common methods of practices and to compare them with the historically established ethical principles of our profession.

The principles of medical ethics are just as binding on those practicing ophthalmology as they are on all other members of the medical profession. There are, however, some situations which are peculiar to the special practice of ophthalmology. These situations present unusual temptations to violate our best ethical standards. It is my purpose in this address to bring anew to your attention some of these principles of ethics and apply them to some common methods of practice in order that these methods may be analyzed. I hope that each individual ophthalmologist will compare his method of practice with that type of ethical conduct which is demanded by the medical profession.

It is much to be desired that both individual ophthalmologists and organized groups will strive to correct any unethical conduct that may be found to prevail. Some forms of practice not only are bringing disrespect and dishonor to the profession but much positive harm as well. When ethical principles and ideals of the medical profession are not respected by even a small group of ophthalmologists, opprobrium is placed on the entire profession, the ethical and the unethical alike. Every individual ophthalmologist becomes the object of derision. This is illustrated by the article mentioned, which sets forth information of certain under-cover, questionable trade practices existing between dispensing opticians and ophthalmologists. For example, the article informs the public that the dispensing optician "may sell direct to the patient, under an arrangement which would shock that patient rudely if he understood it." The article states further that the patient may have

been deluded into thinking that the wholesale price is charged by the dispenser, whereas a full retail price is collected "which he later splits, on the quiet, with your physician." This article also states that "kick-back," "furtive fee-splitting" is not exceptional; that the ophthalmologist pockets a retail price for services *which he does not render*. This practice sometimes is given the softer and more subtle term of a "differential." All these forms of participation in the profits from the supplying of ophthalmic lenses and mountings are usually done without the knowledge of the patient and without rendering any special service to the patient. These are some of the grounds on which ophthalmologists are indicted not only by the public but also by the medical profession. What is your answer to this indictment? Shady and secret methods of rebating which are by no means uncommon can be kept in the dark no longer.

FUNDAMENTAL PRINCIPLES OF ETHICAL CONDUCT

Let me review a few fundamental principles to which all physicians are obligated in order that a foundation may be laid for the proper answer to this indictment and that all may comprehend the approved standard of ethical conduct.

In the booklet¹ published by the American Medical Association the fundamental principle which should activate the relation between the physician and his patients is stated thus:²

A profession has for its prime object the service it can render to humanity; reward or financial gain should be a subordinate consideration.

The question of proper ethical conduct can always be answered by applying this principle. Does the possibility of financial and selfish gain predominate, or do we consider the interest of the patient as most important? I commend the reading of this entire booklet to all ophthalmologists. It briefly and clearly sets forth the ideals which should dominate the physician's conduct and his obligations to the profession, to the public and to patients. I wish to call attention to only a few of these specific obligations which are set forth in this booklet which should be fulfilled by all ophthalmologists. The first is:³

The obligation assumed on entering the profession requires the physician to comport himself as a gentleman and demands that he use every honorable means to uphold the dignity and honor of his vocation, to exalt its standards and to extend its sphere of usefulness.

Read before the Section on Ophthalmology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 4, 1941.

1. Principles of Medical Ethics of the American Medical Association, Chicago, American Medical Association, 1940.

2. Principles of Medical Ethics, p. 3.

3. Principles of Medical Ethics, p. 6.

The second obligation⁴ is a rule of conduct relating to rebates. It is stated thus:

It is unprofessional to accept rebates on prescriptions or appliances, or perquisites from attendants who aid in the care of patients.

The third obligation, which relates to "profits to lay groups" is stated thus:⁵

It is unprofessional for a physician to dispose of his professional attainments or services to any lay body, organization, group or individual, by whatever name called, or however organized, under terms or conditions which permit a direct profit from the fees, salary or compensation received to accrue to the lay body or individual employing him. Such a procedure is beneath the dignity of professional practice, is unfair competition with the profession at large, is harmful alike to the profession of medicine and the welfare of the people, and is against sound public policy.

And finally⁶

the duty of the physician to his patients, to other members of the profession and . . . as well as to . . . the public

is stated thus:

It is incumbent on the physician that under all conditions, his bearing toward patients, the public and fellow practitioners should be characterized by a gentlemanly deportment and that he constantly should behave toward others as he desires them to deal with him. Finally, these principles are primarily for the good of the public, and their enforcement should be conducted in such a manner as shall deserve and receive the endorsement of the community.

Let me call your attention also to the following resolutions, which were adopted by the Section on Ophthalmology of the American Medical Association at the Chicago session in June 1924. These, however, were not presented to the House of Delegates.

Resolved, That it is the sense of the Section on Ophthalmology of the American Medical Association that we deprecate the selling of glasses by the ophthalmologist to his patients, in communities where the services of reliable dispensing opticians are obtainable; and

Resolved, That the acceptance of commissions or considerations, either directly or indirectly, from opticians and optical houses, from the sale of glasses is absolutely contrary to all our standards of medical ethics and is just as reprehensible as the splitting of fees.

These principles of ethics and the resolutions adopted by this section present the obligations which the profession regards as the minimum ethical standards of practice for ophthalmologists. From the information which I have been able to gather I fear that these standards are more "honor'd in the breach than in the observance."

The situation which is peculiar to ophthalmologists consists in the fact that the correction of errors of refraction constitutes a large percentage of his practice—from 60 to 90 per cent; and ophthalmic lenses and their mountings must be supplied and properly fitted to each individual when a correction is prescribed. This requires some form of commercial relationship with those nonmedical men who render this service. Another situation peculiar to the practice of ophthalmology is competition with optometrists in the service of correct-

ing errors of refraction. In many communities the fee of the ophthalmologist for making the ocular examination, including that of refraction, is less than the profit made by one who furnishes the prescribed glasses. Very often too, when the prescription falls into the hands of the optometrist the patient likewise falls into his hands. The degree of cooperation between ophthalmologist and optometrist leaves very much to be desired. The advertising and the activities of the publicity agents of the optometrists place at a disadvantage the ethical ophthalmologist who does not, will not and should not employ these methods to secure favor with a price conscious public, easily influenced by the wiles of the advertiser.

METHODS OF SUPPLYING GLASSES

Let us now analyze the methods, commonly employed, by which glasses are supplied and then point out briefly the ethical principles involved in the use of each method. There are at least six different methods for supplying the correcting glasses, which are as follows:

1. The first method is that in which the ophthalmologist gives the prescription for the lenses directly to the patient, who is instructed to have it filled by any reliable optician of his own choice. Should the patient request the ophthalmologist to recommend an optician, such recommendation is usually made. It is customary for the ophthalmologist to make an inspection after the prescription is filled. For the entire service of supplying a prescription and inspection the ophthalmologist receives a single fee and no other remuneration either directly or indirectly. In the use of this method he does not accept any rebate, "kick-back" or any part in the profit from the glasses provided.

2. By the second method the ophthalmologist personally furnishes the glasses. He does this either by means of an optician's laboratory, connected with his office, or by having the prescription filled and mounted by a dispensing or jobbing optician, the completed job being delivered to the ophthalmologist, who makes final inspection and adjustment, the ophthalmologist charging and collecting the prevailing retail price of the glasses in addition to his fee for examination. This is a direct and open and ethical transaction between doctor and patient.

3. By the third method the prescription is filled and the mounting completely fitted by a wholesale dispensing optician, who charges a nominal fee for the extra service of adjustment of mountings and collects the prevailing retail price for the completed work. This leaves a differential in cost between the wholesale price plus service charge and the retail price, and this differential—a profit—is credited to the ophthalmologist issuing the prescription. This method may or may not be known by the patient.

4. By the fourth method the ophthalmologist sends the patient to some chosen optician, who completes the entire work of filling the prescription, mounting, adjusting and collecting the full retail price, returning to the ophthalmologist a specified rebate, which is done without the knowledge of the patient. By some the prescription is not given to the patient but is delivered to the optician so that none may go astray.

5. The fifth method is one in which ophthalmologists have a partial or complete ownership in an optical dispensing store, which at times is designated by the more subtle name of laboratory. By this method the

4. Principles of Medical Ethics, p. 8.

5. Principles of Medical Ethics, p. 21.

6. Principles of Medical Ethics, p. 24.

ophthalmologist has a direct interest in the profits from sales connected with his prescriptions. The financial interest in such stores is generally not known to the patients who patronize such stores on advice of the ophthalmologist.

6. There is a sixth method. There are a few instances in which a physician with little knowledge of ophthalmology contracts for his services on a salary or on a percentage basis to some retail establishment where both the examination and the sales are conducted.

COMMENT

The first method is the ideal, ethical one; its employment is in harmony with the resolution of this section. It removes the possibility of any selfish interest or bias in the transaction of supplying glasses. This is the highest ethical form of practice and is followed by the leading ophthalmologists in the United States.

The ethics of the second method hinges on the question, under certain given circumstances of location or of availability of dependable opticians, whether adequate optician's services can be obtained. That service which has the best interest of the patient in mind is the one which should be employed; in many localities the ophthalmologist must perform the fitting and adjusting services usually rendered by the retail or dispensing optician. There is nothing unethical about this form of practice if all financial transactions are open and understood by the patient. And there can be nothing unethical in charging the established retail price for the quality of the glasses supplied, when the services of fitting, checking and adjusting are performed by the ophthalmologist. He also assumes the responsibility of the financial transactions.

The third method, the one in which the wholesale dispenser furnishes the glasses and makes some nominal charge above the wholesale price, performs the service of adjustment, inspection and collection but credits the ophthalmologist with a differential, is open to criticism, especially when no additional service is rendered for the differential, which is, of course, a rebate. And this practice is particularly reprehensible when it is done secretly.

There can, of course, be no justification whatever for the receiving of a percentage rebate for glasses which are furnished by opticians who provide all the services connected with the supplying of glasses. This practice violates every ethical medical principle of practice. Under these circumstances the patient either receives an inferior quality of product or an inferior optical service.

The outright or partial interest in any retail optical store is an indirect method of receiving rebates, and the best ethical traditions of the profession are violated when ophthalmologists yield to this temptation to make a profit on ophthalmic supplies.

The practice of selling one's services to some lay body is a direct violation of the physician's obligation to the profession, as I have shown in the quotation from the Principles of Medical Ethics. This practice fortunately is seldom followed. No self-respecting ophthalmologist should be guilty of this unethical practice.

It is a fundamental duty of the ophthalmologist to give to his patients an unselfish, unbiased and unhampered service—the best advice which his experience and knowledge dictate. It is very questionable whether such

service can be rendered without some degree of prejudice, perhaps unconsciously, by an ophthalmologist who has a financial interest in the commercial side of supplying the equipment. As far as refractive problems are concerned, patients consult the ophthalmologist not primarily to get a pair of lenses but to find out whether or not there is need for them. The answer to that problem should be answered without any bias.

It seems to me that the crux of unethical practices lies primarily in some secret form of rebate, differential or kick-back—to some furtive participation in the profits connected with the supplying of lenses and their mountings, which participation is done without the knowledge of the patient. As a consequence of this method of practice, patients are compelled to pay for services which are not rendered either by the ophthalmologist or by the optician. Evidently this practice does not consider the best interest of the patient.

When an adequate and proper fee is made for the professional services rendered, the ophthalmologist is not ethically entitled to some additional fee from the sale of the glasses. When any rebate method is practiced, by whatever name it is designated, which method requires the optician to split the profits with the ophthalmologist, it is probable either that an inferior quality of ophthalmic goods is supplied or that the optician's service is lacking in high standard. All rebates are a form of fee splitting which cannot be defended on any ethical ground. There can be no justification for trading on the confidence of the patient openly or secretly, but the secret practice is the more reprehensible. These forms of unethical conduct are emphatically condemned by the medical profession, and those who practice them are bringing disrespect, derision and dishonor to the profession.

In an address delivered at a recent meeting of the Medical Society of the County of Monroe in New York State, Dr. Van Etten, President of the American Medical Association, said that organized medicine had always upheld the highest ethical standards and "The parent organization has never sold us down the river because of any form of commercial or legislative pressure." Surely the Section on Ophthalmology of the parent organization will not be the exception to this ethical history. No ophthalmologist should be guilty of participation in the secret distribution of profits in the supplying of glasses, nor should he be guilty of trading on the confidence of his patients. Every ophthalmologist should conduct his practice and his relationship with lay bodies so that he will serve the best interests of the public, the patients and the profession. Only in this way will he help to remove the indictment against ophthalmologists and help to maintain the good repute of our honored profession at its historic ethical standard.

53 South Fitzhugh Street.

Galen Made a Mistake.—Galen in his role as an anatomist insisted that the physician should be a dissector, which was a revolutionary idea. He apparently never dissected the human body. He did dissect many types of mammals, birds, reptiles and fish and prepared the bodies of monkeys for anatomical study. He made the mistake of affirming that all animals, including man, were absolutely identical in their organic parts. Apparently he was struck by similarities rather than differences, a trap in which many modern observers are caught.—Lewis, Nolan D. C.: *A Short History of Psychiatric Achievement*, New York, W. W. Norton & Co., Inc., 1941.

OCCULT FRACTURES

ROLAND HAMMOND, M.D.

PROVIDENCE, R. I.

AND

DENIS S. O'CONNOR, M.D.

NEW HAVEN, CONN.

This paper has been written from the point of view of the practitioner who is forced to depend on inadequate facilities for roentgen ray diagnosis. In many otherwise excellent hospitals the visiting roentgenologist attends the hospital once a week and reads all the films taken during the previous week. During his absence the physician is obliged to depend on the diagnosis of a technician or on his own judgment.

We wish to emphasize the importance of the clinical examination for a suspected fracture in the face of a negative verdict by roentgen ray examination. Both examinations should be employed, but in case of doubt the clinical examination should prevail.

There is need of improved education of roentgen ray technicians, better training of the practitioners in the reading of roentgenograms and more cooperation between the physician and the roentgenologist.

The one surgical condition in which the roentgen ray examination as a diagnostic agent might be considered well nigh infallible is fractures. Yet even at this time of relatively advanced roentgen ray technic there are fractures which may be diagnosed clinically in spite of negative roentgen ray findings. We have chosen to call such fractures "occult fractures."

An occult fracture may be defined as one which gives clinical signs of its presence yet which, with excellent roentgen ray technic, cannot be demonstrated by the roentgen ray examination before reparative changes have taken place.

It is, of course, not uncommon to fail to disclose fractures by the roentgen ray examination because of faulty technic or insufficient posturing, and while some

inestimable help in the diagnosis and treatment of fractures, but it is not the last word in diagnosis, although in the opinion of the public and the courts and, we regret to say, in the minds of many medical men it is accorded a place in diagnosis much more prominent than is rightfully to be expected.

For many years roentgenologists have recognized that certain fractures of the ribs, skull and spine could not be diagnosed by any technic known at the present time. This list must be enlarged to include other bones, as we shall demonstrate later.

Watson-Jones,¹ referring to fractures of the carpal scaphoid, says:

Negative x-ray findings do not exclude a recent scaphoid fracture. . . . The clinical diagnosis of a recent fracture of the scaphoid, based on the history, the effusion into the joint and the localized tenderness, is sometimes more accurate than the x-ray diagnosis. Radiographic evidence is by no means infallible. Films of perfect quality taken on the day of injury may show no evidence of the fracture which has been sustained. If the clinical features suggest a probable fracture, but the anteroposterior and oblique radiographs show no evidence of it, the x-ray examination must be repeated two or three weeks later.



Fig. 2 (case 2).—Periosteal thickening of third metatarsal bone of several weeks duration.

Now fractures which cannot be demonstrated by the roentgen ray examination may be considered to be relatively unimportant, which is generally true, but unexplained symptoms are commonly the cause of a great worry to the patient, the source of great expense in the search for an explanation of the pain and the source of great economic loss, especially if the patient is an industrial worker.

The subject has a medicolegal significance, since at least one suit for malpractice has been instigated for the improper treatment of a fracture of the clavicle which was not diagnosed at the first roentgen ray examination.

REPORT OF CASES

CASE 1 (fig. 1).—A young woman² sustained a contusion of her knee in an automobile collision. Roentgenograms of the knee taken shortly afterward were reported negative for fracture. Because of persistent pain and swelling, new roentgenograms were taken several weeks later, no new injury having occurred, and a definite stellate fracture of the patella was found.

CASE 2 (figs. 2 and 3).—A student² at Yale University reported at the orthopedic department, complaining of a painful foot of several weeks' duration. He could not remember any injury. The dorsum of the foot in the metatarsal area showed a moderate diffuse swelling. Pressure over the shaft of the third metatarsal bone was painful, and the bone showed definite

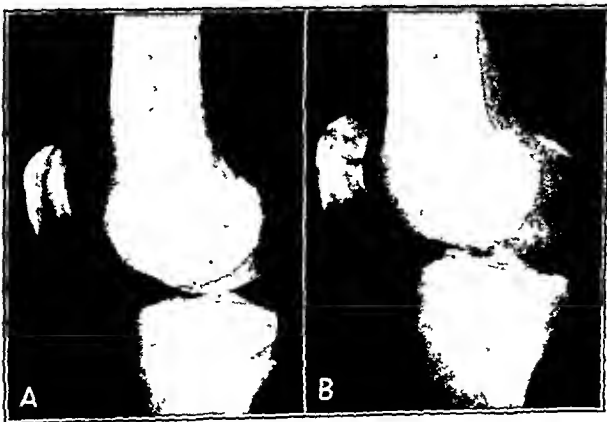


Fig. 1 (case 1).—Occult fracture of the patella: A, shortly after accident; B, appearance several weeks later, showing stellate fracture of the patella.

of the cases here reported may fall into that category we would emphasize that the roentgen ray still is not infallible in the diagnosis of fractures.

The roentgen ray examination is essentially a laboratory procedure and should never be permitted to obscure the clinical examination and point of view. It is of

thickening at this point. A roentgenogram was taken which revealed enlargement of the third metatarsal bone at the point complained of due to periosteal reaction. No fracture line could be made out. Under mild metatarsal support the symptoms subsided within a few weeks.

CASE 3.—M. L., a middle-aged woman,² stumbled and fell on June 14, 1940. She got up and continued on her way. Three months later because of continuation of pain in the foot she consulted a doctor, who hospitalized her for six days but did not make any roentgen ray examination. She continued to favor the foot because weight bearing was painful. She was first seen by one of us on Nov. 2, 1940 for a complaint of pain in the instep of the right foot. Examination revealed tenderness over the distal end of the third metatarsal bone. Roentgenograms of the foot which had been made before consulting us and which had been reported to be negative for bone injury were studied. Careful examination revealed a small area of localized periosteal proliferation on the dorsum of the distal end of the third metatarsal bone. Under a mild support applied to the metatarsal arch the symptoms were relieved.

CASE 4 (figs. 4 and 5).—A. A. B., a woman³ aged 70, in January 1928 was in an automobile accident and was thrown to the right side of the car with her head and neck twisted backward. She was rendered unconscious. On regaining consciousness she complained of pain over the right clavicle. She was taken to a capable surgeon, and roentgenograms by an excellent roentgenologist in two planes⁴ revealed no fracture. The arm was partially immobilized. Three weeks after the accident she felt sudden pain and crepitus just lateral to the middle of the clavicle with pain down the arm to the elbow. She requested another roentgen ray examination, which showed a fracture at the point mentioned with upward displacement and firm callus formation. There was pain on any movement of the right shoulder. She was seen by one of us thirteen weeks after the accident, and the deformity described was observed. Union was firm with considerable callus present. Shoulder motions were painful but not limited. Operative reduction was advised but declined. She was fitted with shoulder straps with some relief of pain. She died two years ago with the deformity still present.

CASE 5.—H. S., a woman⁵ aged 35, on Sept. 7, 1931 was thrown against the side of an automobile and injured the region of the left clavicle. She was taken to a hospital, where a roentgen ray examination revealed no injury to the clavicle. The shoulder was strapped and a sling applied. One week later she consulted one of us complaining of a tender, bony

report this case, fell from a tree on July 27, 1937 and injured his right shoulder region. He was given emergency treatment for a fractured clavicle and taken to a hospital, where a roentgen ray examination showed no fracture. He was referred to Dr. Harris, who made another roentgen ray examination and again no fracture was seen. Nevertheless the arm was placed in a Velpeau bandage and the elbow lifted. On September 3 he



Fig 4 (case 4).—Occult fracture of right clavicle as it appeared on day of injury.

was examined by one of us (R. H.) in the absence of Dr. Harris. There was a forward projection at the middle and inner thirds of the right clavicle. Firm union was present with considerable bony thickening. The right clavicle measured $\frac{1}{4}$ inch shorter than the left. The distal fragment was slightly overriding and projected under the skin as a sharp point. Roentgen ray examination showed a longitudinal fracture with some overriding and a transverse fracture as well at the middle and outer thirds of the clavicle. The patient was seen by Dr. Harris on September 17 and the same condition was present. The sharp spicule under the skin caused no redness or discomfort.

CASE 7 (figs. 6 and 7).—M. O'B.,⁵ seen Aug. 20, 1927, fell while running and injured her left wrist. The wrist showed considerable swelling about the radial styloid, but no silver fork deformity was present. No fracture could be made out by roentgen ray examination. Manipulation of the wrist under anesthesia was advised, in spite of the negative roentgen ray findings. During this procedure considerable crepitus was felt and the swelling disappeared. Postreduction roentgen ray examination revealed a Colles fracture with the fragments in perfect apposition. Convalescence was uneventful and she was discharged October 4 with complete function, and roentgen ray examination showed accurate position and firm union.

We have discovered 6 cases showing fractures of the clavicle without displacement. These occur at the point where the shadow of the clavicle and that of the first rib intersect, which renders interpretation of the roentgenogram difficult. These cases are not reported in detail.

The following cases are reported for purpose of record, although we regret that they cannot be verified, since it is impossible to locate the roentgenograms:

CASE 8.—A young Italian girl² came to the orthopedic clinic of the New Haven Hospital complaining of pain in the metatarsal bone of the foot, especially on weight bearing. She



Fig. 3 (case 2).—Lateral view of foot.

prominence over the middle of the left clavicle. A roentgenogram revealed an oblique fracture of the clavicle at this point with elevation of the outer fragment. Shoulder straps and a sling were applied, and she was discharged on October 30 with no deformity, solid union of fragments, and free shoulder motions.

CASE 6.—J. H., a boy aged 11, seen in the practice of Dr. Herbert E. Harris of Providence, who has allowed us to

3. A patient of Dr. Hammond
4. Phillips, Herman B: A Lateral View of the Clavicle, *J. Bone Joint Surg.* 17: 202 (Jan.) 1935
5. Reported by Dr. Hammond

could not recall any injury. Examination of the foot showed a definite but diffuse swelling on the dorsum of the foot. Tenderness was maximum over the shaft of the third metatarsal bone. Pressure beneath the head of the third metatarsal bone was



Fig. 5 (case 4) — Fracture of right clavicle as it appeared thirteen weeks after the accident.

productive of pain. Extreme passive dorsiflexion or plantar flexion of the third toe was painful. A clinical diagnosis of fracture of the third metatarsal bone was made and a roentgenogram was ordered. The roentgenogram was reported to be



Fig. 6. (case 7) — Occult Colles fracture of left wrist. A, anteroposterior view; B, lateral view.

negative for fracture, and a study of the films failed to reveal any fracture. Several weeks later another roentgenogram was taken which clearly revealed a fusiform periosteal reaction about the shaft of the third metatarsal bone. On the basis of the periosteal reaction the roentgenologist concurred in a diag-

nosis of a fracture of the third metatarsal bone. The patient went on to complete relief of the symptoms for which she came to the clinic. Unfortunately the films of this case are not available.

CASE 9.—A middle aged woman² while walking experienced a sudden sharp pain in her foot. Continuation of the pain for several days forced her to seek medical care. A diagnosis of a fracture of the shaft of the third metatarsal bone was made from the localized tenderness. With special attention to the technic of bringing out bone detail a fine fracture line was found in the shaft of the third metatarsal bone.

CASE 10.—A young woman,² dietitian in the New Haven Hospital, twisted her ankle while walking but continued her activities and did not seek immediate medical aid. Several weeks later because of continued pain and slight swelling about the lateral malleolus of the ankle she consulted an orthopedic surgeon, who requested roentgenograms. These showed a mild



Fig. 7 (case 7).—Appearance after reduction. A, anteroposterior view; B, lateral view.

periosteal proliferation about the distal end of the fibula but no fracture line. The possibility of an early malignant growth was strongly considered but the condition went on to complete subsidence of symptoms within a few weeks. The roentgenograms of this case could not be located at this time.

CASE 11.—D. R. B.,² seen Aug. 6, 1938 with a history that he stubbed his fourth right toe against a bedpost, noticed pain and swelling at the base of the second, third and fourth toes and pain limited to the fourth toe. Roentgen ray examination showed a transverse fracture of the midshaft of the proximal phalanx of the fourth toe but no fracture elsewhere in the foot. He was treated for a fracture of the fourth toe and disappeared from observation after two months of treatment and did not return until October 28. At this time he complained of pain over the second metatarsal bone, where there was considerable thickening and tenderness. Roentgen ray examination showed evidence of a fracture behind the head of the second metatarsal, with marked callus formation. The fracture line in the proximal phalanx of the fourth right toe had disappeared with firm healing.

CASE 12.—A young man² was referred to one of us by his physician because of a persistent pain in the shoulder, which had been present since an automobile collision in which he was involved. Roentgenograms had been taken and reported to be negative for fracture. New roentgenograms were taken which revealed a longitudinal split in the distal third of the clavicle. Under rest and protection for the shoulder the condition cleared up after several weeks.

It might be argued that convincing evidence of roentgen ray failure has not been shown in some of the cases presented, and our failure to present immediate roentgenograms showing no fracture and later roentgenograms showing the periosteal reaction or repair in other cases does not permit disinterested observers to check our report, rendering many of the cases which we have presented as worthless in proving our contention; however, we are convinced that even the small number of acceptable cases of occult fractures presented here does warrant the recognition of occult fracture as a clinical entity.

The location of the occult fractures presented is such that no technical difficulties to the optimum demonstration of a pathologic condition of bone are present, except in the case of fractures of the clavicle.

It is obvious that in those regions of the body in which demonstration of a pathologic condition of bone by roentgen ray examination is difficult because of the distortion of the parts and the irregularity and overlapping of other bones or parts of bones, occult fractures could occur with little if any chance of detection.

One has but to refer to the comparison between the clinical roentgen ray finding in fatal traumatic cases and the findings at the postmortem examination to convince oneself that, if fractures which are not occult cannot be demonstrated, occult fractures certainly may be present and missed in large numbers.

The conception of the occult fracture is offered in the belief that it will prove to be a useful explanation of otherwise unexplained symptoms.

CONCLUSION

In dealing with fractures we should be clinicians first. We should welcome any help that roentgen ray examination can give us but should never allow it to befog our judgment when the clinical findings are at variance with the interpretation of the roentgenogram.

More emphasis should be placed on the clinical examination of a suspected fracture, and the result of this examination should be checked by a study of the roentgenograms.

In case of doubt the injury should be treated as a fracture. The condition should be explained to the patient, and the reason for such treatment made clear. If such a procedure is carried out, I believe most causes for criticism will be removed.

Furthermore, the fracture surgeon should be able to interpret the roentgenograms himself or in collaboration with the roentgenologist. It is only by association of the clinical and roentgen ray findings that a proper interpretation of the injury can be attained.

In a letter to the *Lancet* in 1908 Sir Robert Jones⁶ said:

While Roentgen's discovery has been to us of immense value, chiefly in the classification of our injuries, it has done little if anything to perfect or even alter our treatment of fractures. It is a valuable adjunct to our clinical armamentarium, but it should not be allowed to usurp our other diagnostic faculties. It is deplorable to think of the education of the student today,

who rarely troubles to make himself ordinarily efficient in the diagnosis of a fracture but meekly awaits the revelation of an often misleading roentgen ray photograph.

What was true in 1908 is true in 1941.

219 Waterman Street, Providence, R. I.—158 Whitney Avenue, New Haven, Conn.

ABSTRACT OF DISCUSSION

DR. WALTER C. HILL, Cleveland: By the authors' definition "an occult fracture is one which the roentgenologist fails to find." Over a period of years I have tried to perfect my technic so that these failures are brought to the minimum. These principles are: 1. A roentgen ray tube of the finest focal spot obtainable. 2. Nonscreen film technic whenever possible, or fine detail intensifying screens where screens are required. 3. Proper density of roentgenograms; for example, films made of the hands and feet should be sufficiently dark to require study by the spotlight and should be studied with a magnifying glass. 4. Immobilization of the patient, achieved by judicious use of sandbags and restraining bands. 5. Extra views in all cases in which experience has indicated that fractures are commonly overlooked; for example, special carpal views for scaphoid (navicular) fractures. Special elbow views for the radial head or olecranon; extra angle views of the ankle for fractures about the malleoli; extra vertical and angle views of the shoulder for clavicle study. Routine stereoscopic views of the skull, shoulders, spine, pelvis and hips. 6. Careful clinical examination by the roentgenologist before the patient is dismissed as negative to make sure that all possible variations and positioning in technic have been employed for the case being examined. Recently I reviewed 10,485 wrist examinations in my private practice. There were 2,494 Colles fractures, 534 recent scaphoid fractures and 93 old ununited scaphoid fractures. As an example of the value of cooperation between the clinician and the roentgenologist, in one of my offices where I work in close collaboration with several industrial surgeons I find 1 scaphoid to 3 Colles fractures, while in the other office, where most of the patients are referred by general practitioners, I find only 1 scaphoid to 7 Colles fractures. This indicates clearly that clinicians can be trained to become scaphoid conscious and not overlook these important injuries. One may agree in part with Drs. Hammond and O'Connor that in certain cases the clinical evidence should take precedence over negative roentgen ray findings, most certainly if the roentgen examination is done in a routine or perfunctory manner without the collaboration of an experienced roentgenologist. But Sir Robert Jones and the authors to the contrary, I cannot agree that the value of the roentgen ray in the diagnosis and treatment of fractures has not altered since 1908.

DR. CHARLES N. PEASE, Chicago: The so-called occult fractures are extremely rare. I feel that more of these fractures are not demonstrated in the roentgenogram because a sufficient number of views are not taken. This does not hold true with roentgenologists like Dr. Hill, but for the most part it does. For suspected fracture of the carpal scaphoid, for example, at least films of six different positions of the wrist should be made. Fractures of the other bones are sometimes difficult to visualize, such as the tarsus, metatarsus and clavicle, head of the radius, vertebra and scapula. We are all familiar with these and are agreed that universally improved roentgen technic will go a long way in demonstrating these fractures. Before the days of improved roentgen technic, fractures of the body of the vertebra with little or no displacement were not recognized and collapsed on weight bearing. These fractures, as you know, were called "posttraumatic collapse of Kummel." It is true that if one takes several views of the ankle showing a trauma there may be no roentgen ray evidence of fracture, but after six weeks the cortex of the lower end of the fibula may show some new bone formation. This may be due to unrecognized fracture or periosteal elevation. If there was a great amount of pain and swelling, immobilization, of course, would be employed whether or not a fracture line was demonstrated. To prove the existence of these occult fractures, postmortem examination or animal experimentation will remove all doubt as to their existence.

⁶ Jones, Sir Robert: Letter to Editor, *Lancet*, March 21, 1908, 1, p. 888.

DR. ROLAND HAMMOND, Providence, R. I.: I agree with everything that has been said. My object in the paper is educational. Picture the condition of the average general practitioner in a small community with a good local hospital—the technician, who has been trained by some other technician, and the visiting roentgenologist, who appears once a week. The fracture occurs the day after this roentgenologist has visited. The doctor accepts the diagnosis of the technician, and before the roentgenologist gets around the next week the harm has been done; therefore, it seems to me, a campaign should be instituted for help to the practitioner. Those of us who are interested in fracture work know that more than two views of an ankle are necessary. We know that a lateral view of the clavicle should be taken, but nevertheless there are other fractures. You must all have had the experience at autopsy in a traumatic case of having the pathologist tell you "Well, he had a fracture of so-and-so, but then you couldn't have seen it anyway." More should be done to make it easier for the man who has access to inadequate roentgen ray facilities.

THE ELECTROLYTE THERAPY OF PREMENSTRUAL DISTRESS

J. P. GREENHILL, M.D.

AND

S. C. FREED, M.D.

CHICAGO

Premenstrual tension is the term which Frank has designated for a not uncommon syndrome which occurs in the premenstrual phase and disappears with the onset of menstruation. It usually consists of several of the following symptoms and signs: headache, emotional instability, irritability, abdominal distention, nausea and vomiting, increased sex desire, pruritus and swelling of the vulva. Many women, however, suffer from moderate degrees of such disturbances but these are usually accepted without question as a normal feature of the menstrual cycle. For the sake of convenience we have termed the latter condition "premenstrual distress." It is our belief that both premenstrual distress and premenstrual tension have a common etiology, the difference between the two being a quantitative one. We have postulated that both are the result of changes in the electrolyte and water balance of the various tissues of the body which are probably the result of cyclic ovarian activity. Thus, under the influence of certain ovarian steroids, sodium is retained by the tissues with a subsequent increase in extracellular fluid. When this occurs to a significant degree in the brain, headaches develop; when the gastrointestinal tract is involved, distention occurs, and, when the edema is located in the skin of the labia, pruritus may appear. With the subsidence in activity of the ovary coincidental with menstruation, the various tissues lose their retained sodium and water and the respective symptoms disappear.

On the basis of our theory we¹ administered ammonium chloride for therapeutic purposes in order to prevent the retention of sodium in the tissues. Following this therapy for 15 patients suffering from premenstrual distress or tension we observed almost uniform relief of symptoms. We have considered these results as evidence in support of the hypothesis that premenstrual distress or tension is due primarily to sodium retention. In the present paper we are report-

ing the results of the treatment of 40 patients suffering from premenstrual distress or tension with ammonium chloride.

METHODS AND RESULTS

The disturbances which appeared most frequently in our cases of premenstrual distress were headaches, nervous irritability, abdominal distention and nausea. Less commonly some women experienced increased sex desire, edema of the vulva and a feeling that the skin was tight. Four patients were considered to have premenstrual tension because of the intensity of the symptoms. These patients presented marked emotional instability with behavior changes consisting of depression, excitation, "temper tantrums" or "crying spells." Four patients demonstrated subcutaneous edema, excluding those with vulvar edema. One patient, a physician's wife, gained 7 to 8 pounds before each menstrual period, which was lost after the flow.

Ammonium chloride was administered in doses of 3 Gm. daily, divided in three doses, starting ten to twelve days before the expected menstrual period. In order to limit the sodium intake somewhat, patients were asked to refrain from using table salt or sodium bicarbonate preparations.

Thirty-four of the 40 patients had definite relief from the usual premenstrual disturbances. These patients stated that they had an increased sense of well-being at this time in addition to freedom from distress. It was interesting to observe that many of the patients on ammonium chloride therapy were unaware of an impending menstrual period, which they could formerly predict a number of days in advance. The relief of symptoms was most gratifying for those patients suffering from the severe forms of premenstrual distress. Here the results were quite dramatic. Those patients who usually suffered from abdominal distention or visible edema failed to do so after therapy. Relief from all types of disturbances was obtained in subsequent cycles, provided the electrolyte therapy was continued. The administration of ammonium chloride was of little use in alleviating migraine unrelated to the menstrual cycle, dysmenorrhea or painful breasts.

COMMENT

It is well known that women frequently gain weight in the premenstrual phase and lose a corresponding amount during and following the menses. This fluctuation in weight is acknowledged to be the result of cyclic retention and loss of water. Thorn and his associates² have demonstrated that the retention of water during the premenstrual phase in normal women and those exhibiting premenstrual edema can be accounted for by sodium retention. There is considerable evidence that this response is induced by ovarian steroids. Thorn and Emerson³ have concluded that "premenstrual edema is probably the result of normal cyclic changes in sex hormone secretion acting on a precipitating factor in patients with some underlying change which predisposes to excessive retention of sodium chloride and water." These investigators have shown that a low sodium intake and the administration of potassium citrate prevents this retention of fluid.

In our opinion premenstrual edema is only one phase of the generalized sodium retention in the body and, because it is an involvement of the subcutaneous tis-

Read before the Section on Obstetrics and Gynecology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 6, 1941.

1. Greenhill, J. P., and Freed, S. C.: The Mechanism and Treatment of Premenstrual Distress with Ammonium Chloride, *Endocrinology* 26: 524 (March) 1940.

2. Thorn, G. W.; Nelson, K. R., and Thorn, D. W.: A Study of the Mechanism of Edema Associated with Menstruation, *Endocrinology* 22: 155 (Feb.) 1938. Thorn and Emerson.³

3. Thorn, G. W., and Emerson, Kendall, Jr.: Role of Gonadal and Adrenal Cortical Hormones in the Production of Edema, *Ann. Int. Med.* 14: 757 (Nov.) 1940.

sues, it is a visible phenomenon. We contend that internal organs of the body may undergo a similar change and the increase in water content manifest itself by the development of the various symptoms of premenstrual distress or tension. Ammonium chloride relieves the symptoms of premenstrual distress or tension by removing the extracellular fluid or "hidden edema" of such tissues in the same manner as it prevents the formation of premenstrual edema.

Several methods have been recommended for preventing or overcoming premenstrual tension. Frank,⁴ who first reported the treatment of this condition, obtained satisfactory results with the use of magnesium sulfate by mouth. According to this investigator, premenstrual tension is due to an increase in blood estrogens, and his purpose in using magnesium sulfate was to increase the elimination of the estrogens by the intestine. Such results as he obtained might, however, be satisfactorily explained by the dehydrating effect of magnesium sulfate. Israel⁵ has reported excellent results in cases of premenstrual tension by administering progesterone hypodermically during the premenstrual phase. Similar results have been claimed by Greenblatt⁶ for the use of testosterone propionate. From the results obtained by the latter two investigators it would appear that the ovarian steroids responsible for the development of premenstrual symptoms would be of the estrogenic type, since both testosterone and progesterone are capable of antagonizing many effects of estrogens. Israel observed an intensification of the symptoms of premenstrual distress following the administration of estrogens. Nevertheless, Atkinson and Ivy⁷ have reported successful prevention of premenstrual edema with an extract of the placenta whose active ingredient was estriol glucuronide. However, these investigators were unable to obtain similar effects with estriol itself. Thorn and Emerson suggest the possibility that progesterone or progesterone plus estrogens are the steroids responsible for premenstrual edema. Although further evidence is required before conclusions are justified as to the specific steroids giving rise to these conditions, it appears most likely that the responsible steroids are elaborated by the corpus luteum.

Ammonium chloride is not specific in the electrolyte therapy of premenstrual distress or tension. Other salts which can displace or withdraw sodium may be equally effective. Investigations are now being carried out by us to determine the efficacy of several such salts for their ability to relieve these conditions.

SUMMARY

We have found that ammonium chloride therapy is effective in relieving patients suffering from premenstrual distress or tension, the chief symptoms of which are headache, emotional instability, irritability, abdominal distention, nausea, vomiting, pruritus and swelling of the vulva. The hypothesis that this syndrome is the result of water retention in the tissues which gives rise to the specific symptoms is supported by the results of our treatment of 40 women and by evidence presented by other investigators.

55 East Washington Street.

4. Frank, R. T.: The Hormonal Causes of Premenstrual Tension, *Arch. Neurol. & Psychiat.* 26: 1053 (Nov.) 1931.

5. Israel, S. L.: Premenstrual Tension, *J. A. M. A.* 110: 1721 (May 21) 1938.

6. Greenblatt, R. B.: Syndrome of Major Menstrual Mollimina with Hypermenorrhea Alleviated by Testosterone Propionate, *J. A. M. A.* 115: 120 (July 13) 1940.

7. Atkinson, A. J., and Ivy, A. C.: Menstrual Edema: A Report of a Case Controlled by Emmenin But Not by Theclol or Theelin, *J. A. M. A.* 106: 515 (Feb. 15) 1936.

ABSTRACT OF DISCUSSION

DR. JACOB KOTZ, Washington, D. C.: Premenstrual symptoms of depression, headache and gain in weight offer a problem which seriously handicaps the patient economically and socially. Since Dr. Greenhill's preliminary report, I have used ammonium chloride in several cases of severe premenstrual tension, headache, nausea and vomiting. The results have been gratifying and often spectacular. I have noted in the treatment of obesity that almost invariably there is a failure to lose weight and often quite a gain during the week premenstrually, even though the usual therapy was continued. A consistent loss of weight was attained by premenstrual administration of ammonium chloride. The sex sterols are involved in the salt and water metabolism, the disturbance of which leads to retention of water by the tissues. I question, however, whether estrogen is the sole factor. This is prompted by the fact that the bleeding induced in postmenopausal women by estrogen therapy is not preceded by tension or distress. The same is true for the few cases of anovulatory menstruation in younger women. It would seem, therefore, that the disturbance is in the estrogen-progesterone metabolism and that the presence of progesterone is necessary for the production of this phenomenon.

DR. KARL JOHN KARNAKY, Houston, Texas: The Menstrual Disorder Clinic, Jefferson Davis Hospital, Houston, Texas, has used ammonium chloride in 42 cases with uniformly successful results. Detailed chemical analyses of the blood are being studied in these cases. I have discovered a simple and efficient way to relieve premenstrual pelvic distress, dysmenorrhea and pelvic pains by the injection of 2 to 10 cc. of procaine borate or procaine hydrochloride into the anterior lip of the cervix, using a 10 cc. syringe and a spinal needle. Procaine borate, which has a pH of 8.5, is preferred to procaine hydrochloride, which has a pH of 3.5. By the injection of procaine, the pains in the pelvis are relieved immediately and in many cases are relieved throughout the menstrual flow. Eighty endometrial biopsies were obtained from 36 normal menstruating women and 6 women with functional uterine bleeding taking ammonium chloride. The 36 normal menstruating women all had a premenstrual endometrium, so ammonium chloride does not affect ovulation. The endometrium did not change in the cases of functional bleeding. In the 6 cases of functional bleeding there was less bleeding while ammonium chloride was being taken; so this may be another use for ammonium chloride. This will be studied further. Why does ammonium chloride work? Based on a new theory as to the cause of menstruation and labor, I am of the impression that it is due not only to the fact that edema is relieved but that, by reducing the sodium ion in the blood, one also increases the amount of potassium, magnesium and phosphorus ions, and especially the potassium. Potassium has much to do with functional activity of both the voluntary and the involuntary nervous system. Also the loss of sodium ions causes a less alkaline pH , with resulting freeing of the un-ionizable calcium ions. The increase in potassium ions apparently helps to conduct a normal impulse from the uterus to the brain through the autonomic nervous system. The administration of ammonium chloride by mouth favors a more ionizable calcium and favors shifting the pH of the blood toward the acid side. This shift in pH toward the acid side may cause the ratio of potassium to calcium to be normal, so more regular and synchronous uterine contractions; also the shift of the pH toward the acid side may cause the disappearance of the ill feeling that sometimes occurs premenstrually; or a slight alkalosis may be the entire cause of ill feeling at the menses. The ill feeling of menstruation has been produced experimentally by introducing alkalis into the anterior lip of the cervix.

DR. ESTHER B. TRIETZ, Cincinnati: Since Dr. Greenhill's first paper I have been interested to find whether ammonium chloride would help in the handling of psychotic patients. Many patients having manic-depressive psychoses and those with schizophrenic syndromes have outbursts of aggressive phenomena during the premenstrual and menstrual periods. This close relation between psychic activity and the ovarian cycle has recently been demonstrated by Dr. Benedek by accompanying the psychoanalysis of a patient with vaginal smears. We have found in some psychotic cases that there are autonomic disturbances directly related to the level of estrogenic content. It

would seem, therefore, that Dr. Greenhill's treatment might have some effect on autonomic activity. We have applied his treatment in cases in which postencephalitic crises were associated with the menstrual period and have been gratified at remissions in cases previously treated unsuccessfully by all known means. The patients themselves are enthusiastic because we have been able to send some home after prolonged hospitalization. Further testing and study will be necessary to learn what the action of ammonium chloride might be on psychomotor activity.

DR. J. P. GREENHILL, Chicago: Dr. Kotz emphasized a good point, namely that estrogen alone is probably not entirely responsible for the action of ammonium chloride, because the premenstrual tension does not occur at the height of follicular development. The change in water and electrolyte balance is probably due to the action of the steroids in the corpus luteum. Since it is highly likely that progesterone is not the responsible agent, the estrogens or the estrogens plus some other steroid of the corpus luteum may be involved. It was interesting to hear Dr. Tietz's remarks about the use of ammonium chloride for premenstrual and menstrual outbreaks in psychotic patients.

RAPID WEIGHT REDUCTION: LOSS OF THREE HUNDRED POUNDS IN EIGHTEEN MONTHS

REPORT OF A CASE

JAMES J. SHORT, M.D.

Associate Clinical Professor of Medicine, New York Post-Graduate
Medical School of Columbia University

NEW YORK

Questions which frequently present themselves to the practitioner confronted with the problem of reducing an overweight patient are: Can the weight be successfully reduced? If so, to what degree and how rapidly with safety? Despite repeated reports to the contrary, the impression lingers in the minds of many physicians that certain types of obesity are irreducible or so resistant to attempts at reduction that only a small amount of the excess weight can be removed.

NUTRITIONAL PRINCIPLES

There is probably no type of obesity, regardless of its cause, which will not respond by loss of weight to a submaintenance diet. Such a diet is one with a caloric value less than the daily expenditure by the subject. If a deficit can be thus successfully maintained, the body is compelled to draw on its own stores of fat for heat and energy. The problem, therefore, is to maintain a continued caloric deficit over a sufficient period to accomplish the desired result. Since metabolic adjustments are constantly being made in response to changing conditions, it is sometimes a bit difficult, though possible, to maintain such a deficit and at the same time to meet all the essential nutritional requirements.

There is no theoretical or practical reason for believing that not every bit of excess weight can be removed. This conception seems somewhat staggering when one considers the tremendous weights sometimes encountered. Nevertheless, the truth of this statement has been clearly demonstrated on numerous occasions. Therapeutic reduction of 239 pounds (118.4 Kg.) by medical means previously has been reported.¹ The patient has continued in excellent health and has maintained her weight at or near a normal level. Nor was her case unique, since the literature tells of other cases in which even larger amounts have been successfully removed.²

The question as to the rate at which weight reduction may be accomplished with safety is one on which there could be a wide diversity of opinion. Evans and Strang³ of Pittsburgh broke with more or less established medical tradition when they announced a plan successfully employed for rapid weight reduction. I have employed a similar regimen for a number of years with extremely gratifying results. Although it has not been found feasible or necessary to employ the extremely low diets of 300 to 400 calories mentioned by Evans and Strang, nevertheless a fairly rapid rate of reduction in weight has been found to hold out a much better prospect of success than the slow methods formerly employed. Morale, an intangible though important factor, is much better among patients who can perceive definite, consistent, weekly results. Theoretically, there seems to be no objection to the rapid oxidation of fat, provided essential dietary requirements are adequately met. Protein in an amount sufficient to replace daily that lost by metabolic processes is an absolute essential. To this end 1 to 1.5 Gm. per kilogram of ideal (not actual) weight should be provided. Approximately an equal amount of carbohydrate should likewise be given, although this should be varied according to the degree of adiposity at any one time. Strang, McClugage and Evans⁴ stated that 0.6 Gm. per kilogram of body weight is the minimal amount which can be employed to protect essential protein tissues of the body. However, if at all times one attempts to employ only the minimal requirement for purposes of protecting body protein, there will occasionally result in very obese patients an acidosis of the ketogenic type, since an amount sufficient to protect the proteins may in certain cases be inadequate to insure complete oxidation of the fats. As the daily caloric expenditure varies according to the degree of obesity, the huge breakdown of fat necessary to supply the required heat and energy may be so overwhelming as to produce acute ketosis if too little anti-ketogenic food is provided. I have seen this take place in a number of cases in which the overenthusiastic patient has taken less food than the diet provided. Fortunately, the occurrence of acidosis of this type is quickly corrected merely by the giving of sugar and other carbohydrates. If vomiting has ensued, as occasionally happens, the parenteral administration of dextrose may be required.

The reducing diet should contain a minimum of fat. Since the body has an excess of reserve fat readily utilizable, there is no point whatever to adding more fats to the therapeutic diet. Twenty Gm. of fat daily is about the minimum which I have been able to employ while meeting other requirements.

An adequate supply of vitamins is an important consideration in any reducing diet. Diets which I have frequently employed range from approximately 600 to 900 calories. Although it might be expected that the amount of A vitamin would be inadequate in a diet so low in fat content, the daily requirement is probably largely met through the use of green and other vegetables which contain its precursor, carotene. Since the diets employed contain citrus and other fruits, the danger of a C vitamin deficit is also avoided. The outstanding possibility of inadequacy is found in the B complex. A careful survey of reducing diets employed

1. Short, J. J.: Extreme Obesity Followed by Therapeutic Reduction of Two Hundred and Thirty-Nine Pounds, *J. A. M. A.* 111:2196 (Dec. 10) 1938.

2. Newburgh, L. H.: The Importance of Actually Measuring the Total Heat Production, *Arch. Int. Med.* 8:459 (Oct.) 1934.

3. Evans, F. A., and Strang, J. M.: A Departure from the Usual Methods in Treating Obesity, *Am. J. M. Sc.* 177:339 (March) 1929.

4. Strang, J. M.; McClugage, H. B., and Evans, F. A.: The Nitrogen Balance During Dietary Correction of Obesity, *Am. J. M. Sc.* 181:336 (March) 1931.

in the Post-Graduate Nutrition Clinic and in private practice has indicated that the daily amount is definitely less than optimal. It is possible that the requirement with reducing diets is less than the average, since the amount of B₁ (thiamine) required is somewhat in proportion to the consumption of carbohydrates. Nevertheless, to insure against a possible deficit of this substance it has been my practice to add the B complex in concentrated form. No definite symptoms have resulted, however, in hundreds of patients who have been treated in the clinic with similar diets without the addition of the B complex. The amount of vitamin D in the diets employed is considered adequate.

Reducing diets can well contain considerable amounts of skimmed milk and cottage cheese, which are good sources of calcium. There is no need for the restriction of salt unless fluid is retained. Other minerals are largely provided by an abundance of vegetables of low carbohydrate content, as usually allowed.

Fluids need not be restricted unless there is a tendency to fluid retention. A routine restriction of fluids as practiced by many physicians is an unnecessary hardship if they provide no calories and the patient is in fluid equilibrium.

Metabolic stimulants have been previously discussed.⁵ The total basal heat production (i. e., the total caloric output on resting) increases directly with increasing weight. The extra heat required is produced by the vital tissues of the body, principally by the muscles. In very obese persons the caloric output per hour is prodigious. It is easy to approximate the calories of the daily maintenance diet consumed by such persons by multiplying the number of calories per hour, obtained when doing the basal metabolism test, by 24. This represents the basal (or resting) twenty-four hour caloric requirement. The addition of 25 per cent of this value for usual activity and specific dynamic action of food (a conservative estimate) will give approximately the number of calories required daily for maintenance. Practically, this determination is of great value for confronting persons who fail to lose weight on a prescribed submaintenance diet. When patients are shown scientifically that they are consuming food far in excess of the diet, confessions usually follow.

The case to be described is somewhat unusual because of the huge initial weight of 479 pounds (217.2 Kg.), wholehearted cooperation given for twenty months and the amount and rapidity of weight reduction.

REPORT OF CASE

History.—O. A., a woman aged 35, first seen on Dec. 30, 1938, complained of extreme obesity which dated from early childhood and a severe cough of five to six months' duration. She recalled that at the age of 14 she had weighed 200 pounds (90.7 Kg.); at 21, 260 pounds (117.9 Kg.), and at 31, 375 pounds (170.1 Kg.). She believed the reason for her overweight was simply the consumption of too much food.

Her father, who was 6 feet 1 inch (185.4 cm.) tall, had weighed 190 pounds (86.2 Kg.) and died of heart disease at the age of 51. Her mother, who was 5 feet 7 inches (170.8 cm.) tall, had reached a maximum of 220 pounds (99.8 Kg.) and died of disease of the gallbladder at 51. One living brother, 6 feet 1 inch (185.4 cm.) tall, weighed 200 pounds (90.7 Kg.). One living sister was extremely thin at 123 pounds (55.8 Kg.), and another sister was obese at 250 pounds (113.4 Kg.). There was no history of diabetes, but the father was thought to have had hypertension.



Fig. 1.—Patient at 479½ pounds (217.4 Kg.).



Fig. 2.—Patient at 250 pounds (113.4 Kg.).



Fig. 3.—Patient at 175 pounds (79.4 Kg.), after operation.

The patient performed no active physical exercise but was ambulatory. She had occasional edema of the lower extremities after standing but no varicose veins or symptoms referable to the arches. The joints were not painful. Headaches were frequent, and she had been told that her blood pressure was elevated. There were no digestive symptoms. The skin of the lower extremities had occasionally become ulcerated.

A marriage of fourteen years had resulted in one pregnancy followed by a spontaneous miscarriage thought to have been due to the strain of lifting. Her elimination was satisfactory and was occasionally aided by the use of magnesium sulfate. She ate sparingly of meat, eggs and fish and consumed no vegetables or cereals and little fruit. She drank four to five cups of coffee and one glass of milk daily but made up her huge intake of food by eating large amounts of cake and other baked foods. Although her regular meals were of moderate size, she ate at frequent intervals throughout the day. She used no tobacco, alcohol or drugs. She had had nocturia, urinating four or five times, and the menses, established at the age of 16, had always been irregular, with occasional

5 Short, J. J., and Johnson, H. J.: The Increased Metabolism of Obesity: Use and Abuse of Metabolic Stimulants, *J. A. M. A.* 106: 1776 (May 23) 1936. Short¹

absences of several months. She slept poorly because of her persistent cough and frequency of urination.

Her history was essentially negative for acute disease. There had been no operations.

Physical Examination.—On physical examination the patient weighed 479½ pounds (217.4 Kg.), with an estimated normal of 155 pounds (70.3 Kg.). She appeared to be fairly buried in thick layers of fat, as pictured in figure 1. The skin and mucous membranes were without blemish. The ocular muscles and fundi were normal. The tonsils had disappeared, and the teeth were in good condition. The thyroid gland was not palpable. The hands and the lymphatics were normal. The pulse rate was 80 and regular, the blood pressure 216 systolic and 130 diastolic and the cardiac sounds clear and of fair quality. The lungs gave forth numerous musical and sibilant rales of asthmatic type on inspiration and expiration, and there was a frequent irritative cough. The abdominal and pelvic viscera were impossible of palpation because of the extreme obesity. There was negligible edema of the lower extremities. Patellar reflexes could not be elicited because of fat.

at one-quarter, one-half and three-quarter hour periods respectively. The Wassermann and the Kahn reactions were negative.

The basal metabolic rate (calories per square meter per hour) was 22.1 per cent above the average normal. There was a total output under basal conditions of 126.9 calories per

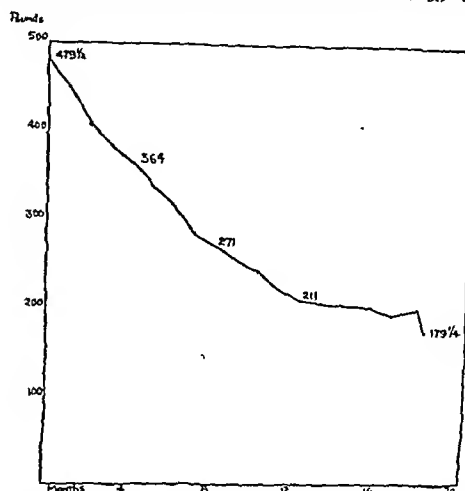


Fig. 5.—Loss of 300 pounds (140.6 Kg.) in eighteen months by dietary and endocrine therapy. The diet was 600 to 800 calories, and from zero to 6 grains (0.4 Gm.) of thyroid was administered. Operation followed.

hour. Since the patient's theoretical average normal output at ideal weight was 63.7 calories per hour, this gave a figure of +99 per cent for the total heat production, which is practically double the normal (fig. 4).

The vital capacity was 1,500 cc., or 26 per cent of normal when calculated for the original weight. Calculated for the ideal weight, this would represent 43 per cent.

An initial electrocardiogram was not taken. One taken on Feb. 19, 1940, when the patient's weight was 197 pounds (89.4 Kg.), showed left axis deviation, so common in obesity, but no definite impairment. Initial fluoroscopic examination was not attempted, but on Sept. 25, 1939, when the weight was 257 pounds (116.6 Kg.) the total diameter of the heart was 15 cm. and there was evidence of slight ventricular enlargement.

Treatment.—Since it was thought that the patient was too lacking in self control to carry out a strict regimen at home, she was placed in a nursing home where she could be under constant supervision and dietary management. A diet of approximately 600 to 800 calories was prescribed in accordance with the principles already stated. Since it was calculated from her metabolic rate that a maintenance diet was approximately 4,000 calories, a diet of 600 to 800 calories would give a large deficit and result in a fairly rapid loss of weight. This occurred in accordance with expectations and is expressed graphically in figure 5.

After the loss of about 40 pounds (18.1 Kg.) the weight became stationary for one week because of the appearance of moderate edema of the lower extremities. This edema persisted in varying degrees throughout most of the period of reduction and was successfully combated from time to time by the use of ammonium chloride and mercurial diuretics. The intake of fluids and chlorides presumably was curtailed, but control was not perfect. After the patient had been for several weeks on the reducing diet, thyroid was administered to offset

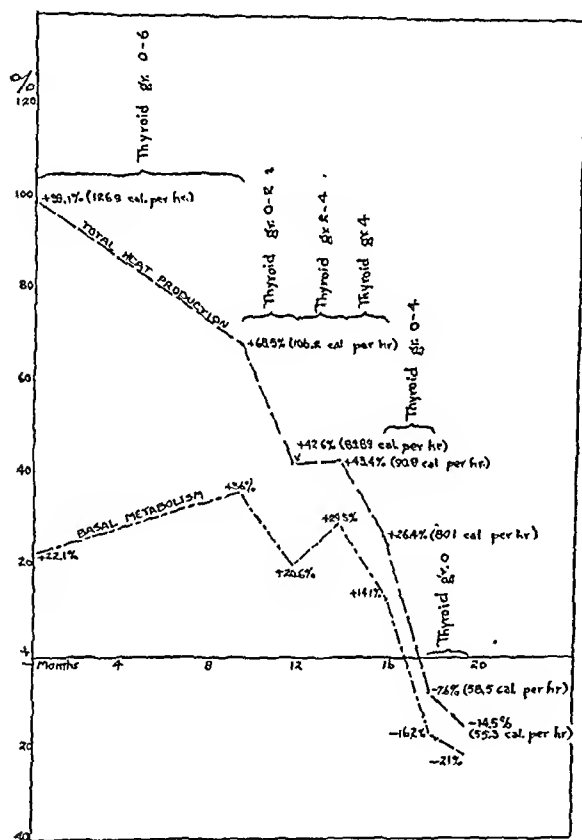


Fig. 4.—Metabolism studies. Total calories per hour are at basal rate.

Laboratory Reports.—The urine showed a slight trace of albumin, with occasional hyaline and granular casts. The specific gravity ranged from 1.020 to 1.034. There was no sugar. The level of sugar in the blood as determined by the dextrose tolerance test was 117 mg. during fasting; at one-half hour, one hour and two hours after the ingestion of 100 Gm. of dextrose it was 125, 160 and 170 mg. respectively. At the one and the two hour period the patient voided 0.17 and 0.2 per cent of sugar in the urine.

The hemoglobin content was 14.2 Gm. per hundred cubic centimeters, or 104 per cent. The erythrocytes numbered 4,740,000. The value for urea nitrogen was 11.3 mg. and for nonprotein nitrogen 30 mg. per hundred cubic centimeters of blood, with a ratio of 37.5 per cent. The cholesterol content was 188 and the uric acid content 3.1 mg. per hundred cubic centimeters. The sedimentation rate was 7, 28 and 50 mm.

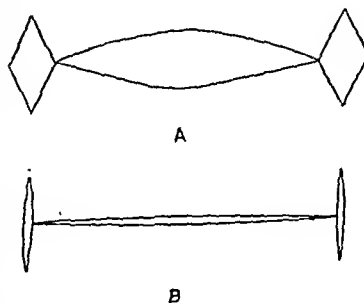


Fig. 6.—Type of incision in the plastic operation on the abdomen. A, before closure; B, after closure.

the reduction in metabolic rate which presumably had occurred from caloric restriction. Unfortunately, facilities were not available for metabolism tests at the nursing home.

The pulse rate varied from 74 to 100 for the first ten months and from 60 to 80 for the remainder of the period. The blood pressure became stabilized at an average level of from 120 to 136 systolic and from 60 to 80 diastolic. Vitamins were given in concentrated form throughout the reducing period.

Several complications ensued after 200 pounds (90.7 Kg.) had been lost. Dyspnea, weakness, nausea, excessive thirst and abdominal pain were noted on two or three occasions, at which times considerable acetone was present in the urine. These symptoms of acidosis were promptly checked by increasing the carbohydrates of the diet.

Within nine months the patient had reached 257 pounds (116.6 Kg.). She was permitted to return home to continue as an office patient. She did well for three months, but her weight became stationary at approximately 200 pounds (90.7 Kg.) after a loss of 279 pounds (126.5 Kg.). This weight persisted as a plateau for five months, as indicated in figure 5. At the end of that time she was hospitalized in the medical service of the New York Post-Graduate Medical School and Hospital, where she lost 17½ pounds (8 Kg.) in twelve days. Part of this weight was edema fluid in the lower extremities resulting from varicose veins.

At the end of the twelve day period she was transferred to the surgical service of Dr. Ralph R. Moolten for removal of excess skin from the abdomen and arms. His report follows:

"An abdominal panniculus hung in apron-like formation to about halfway down the thighs. Unless well trussed up with an abdominal binder this apron would interfere with walking. The under surface was excoriated by perspiration and by soiling with urine.

the skin was closed with interrupted silk sutures. Because of the diamond-shaped incisions at each end of the transverse one, the resulting final scar was H shaped. Enough skin was resected so that the incisions closed snugly but without undue tension. At all times during the operative procedure, the denuded areas were well covered with warm saline packs.

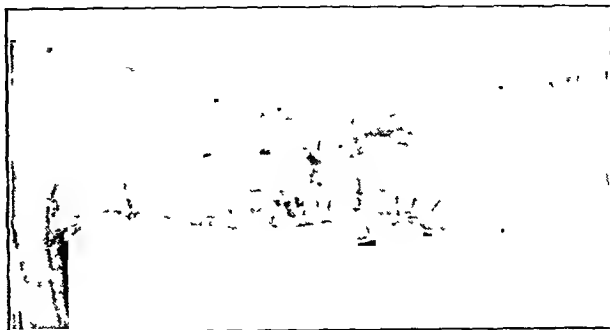


Fig. 8—Arm after operation.

Nevertheless, there was considerable reaction, manifested by a pulse which varied in rate, quality and rhythm. The patient left the operating table in fair condition. The postoperative course in the main was uneventful, complicated only by small areas of slough at each outer angle of the wound. The specimens of tissue weighed 6¾ pounds (3 Kg.) and consisted of skin and subcutaneous tissue alone, with practically no fat. Flatness of the abdomen even in the upright posture resulted.

"The next problem was a cosmetic procedure on the arms. When the arms were extended the skin hung in long, ugly folds from the axillas to the bends of the elbows. The method of outlining the incisions was to have the patient sitting on a table and leaning on her extended arms with the palms slightly behind her. On the mesial surface of each arm an irregularly club-shaped line of incision was delineated with an indelible pencil, covering an area approximately 11 by 4½ inches (28 by 11 cm.). As in marking out the abdominal incision, it was definitely ascertained that the cut edges could be approximated without undue tension.

"The wounds on the arms also were closed with interrupted silk sutures, and healing occurred by first intention."

Excess skin was subsequently removed from both thighs in similar fashion. The appearance of the patient before and after operation is shown in figures 7 and 8.

COMMENT

This case emphasizes again that there is apparently no limitation to the amount of excess weight which can be removed with perfect safety. It also indicates that in grossly overweight persons rapid weight reduction may be maintained over considerable periods without injury to health. During the first four months the patient lost 115 pounds (52.1 Kg.) at an average rate of 29 pounds (13.2 Kg.) per month. At the end of eight months she had lost 208 pounds (94.8 Kg.) at an average rate of 26 pounds (11.8 Kg.) per month, and at the end of twelve months she had lost 268 pounds (121.5 Kg.) at an average rate of 22 pounds (10 Kg.) per month.

The loss of so much supporting tissue over a short period brought with it certain complications, however. It was interesting to find that the patient had almost lost the power of locomotion after returning to her home. She was unable to climb steps but could walk short distances on the level. At this point she was told that she might expect a return of power to the affected muscles, since it was assumed that the removal of infiltrated fat had left the muscles relatively too long to be effective. The prediction proved true, and in a few weeks the patient was able to take up activities of

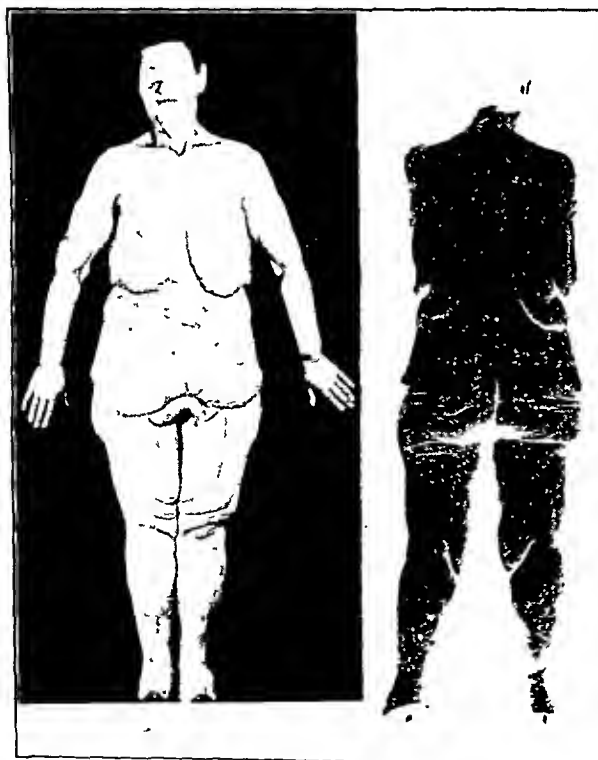


Fig. 7.—Patient before operation.

"At operation, instead of the usual elliptical incision from one anterior superior spine to the other, incisions were made as indicated in figure 7. The reason for the vertical incisions was to take up a large amount of redundant skin on the back and sides of the hips and thighs.

"With the patient under gas-oxygen anesthesia, the soft parts were resected down to the fascia. After suitable hemostasis,

housework and travel with practically normal facility. Another complication was the appearance of varicose veins, probably because of the loss of the supportive function of the subcutaneous fat. These will be treated surgically. In general health and mental attitude there has been a marked improvement. It is not uncommon for patients, when liberated from their prisons of fat, to express extreme gratification, and this patient was no exception.

Although initially the dextrose tolerance was definitely impaired, the patient was not classified as having diabetes. Poor tolerance of dextrose is frequently seen in obesity without diabetes, though the explanation of it is a problem.⁶ At the close of the periods of reduction the dextrose tolerance had returned to a normal curve, with figures of 106, 166, 182 and 111 mg. per hundred cubic centimeters during fasting, at one-half hour, one hour and two hour periods respectively.

The initial elevation of blood pressure and the subsequent restoration to a normal level also are not unusual, since obesity per se elevates blood pressure⁷ and reduction usually causes its diminution.

As to the cause of gross overweight in the case described, one cannot be too dogmatic. Undoubtedly, cases of such extreme obesity are rare, and for this reason one would expect to find some gross abnormality in glandular balance. It should be noted, however, that this patient had a basal metabolic rate which at +22 per cent was greatly in excess of normal and a total metabolism under basal conditions of twice the normal. It cannot be said, therefore, that she lacked the ability to oxidize foodstuffs. It can be asserted with every assurance that to maintain her weight she must have been consuming large amounts of food, probably to the extent of more than 4,000 calories daily. At the close of the period of weight reduction there was nothing to indicate that this patient had a glandular system in any sense abnormal. In the search for hormones which may have a direct or indirect effect on the metabolism of fat, the importance of insulin is often overlooked. Given to animals or human beings, this substance frequently results in spectacular increases of weight.⁸ It is not going too far afield to suppose that in certain persons the pancreas may be conditioned by diet or endocrine imbalance to produce a marked excess of insulin, with increased hunger and consequent obesity. It has further been shown⁹ that by abstention from carbohydrate foods the pancreas may be oppositely conditioned to a state of such extreme latency as to be unable to respond to sudden demands placed on it. This factor may in part explain the indifference to food frequently manifested by obese persons after becoming accustomed to a reducing diet.

SUMMARY AND CONCLUSIONS

1. In a case of extreme obesity, in which by therapeutic means were secured losses in weight of 115 pounds (52.1 Kg.) in four months, 208 pounds (94.8 Kg.) in eight months, 268 pounds (121.5 Kg.) in

6. Short, J. J., and Johnson, H. J.: Glucose Tolerance in Relation to Weight and Age. A Study of Five Hundred and Forty-One Cases. *Proc. A. Life Insur. M. Dir. America* (1938) 25: 237-257, 1939.

7. Short, J. J., and Johnson, H. J.: An Evaluation of the Influence of Overweight on Blood Pressures of Healthy Men: A Study of 3,516 Individuals Applying for Periodic Health Examination. *Am. J. M. Sc.* 198: 220 (Aug.) 1939.

8. Short, J. J.: Increasing Weight with Insulin. *J. Lab. & Clin. Med.* 14: 330 (Jan.) 1929. MacKay, E. M.; Callaway, J. W., and Barnes, R. H.: Hyperalimentation in Normal Animals Produced by Protamine Insulin. *J. Nutrition* 20: (July) 1940. Campbell, W. R.; Graham, R. R., and Robinson, W. L.: Islet Cell Tumors of the Pancreas. *Am. J. M. Sc.* 198: 445 (Oct.) 1939.

9. Sweeney, J. S.: Dietary Factors That Influence the Dextrose Tolerance Test: Preliminary Study. *Arch. Int. Med.* 40: 818-830 (Dec.) 1927.

twelve months and 300 pounds (136.1 Kg.) in eighteen months with an over-all average of 16 $\frac{2}{3}$ pounds (7.6 Kg.) per month, a total loss of 304 $\frac{1}{2}$ pounds (138.1 Kg.) was accomplished without any impairment in general health and with only a few minor adverse episodes.

2. Reduction in weight was accomplished by the use of submaintenance diets which averaged 600 to 800 calories and the careful administration of thyroid as a metabolic stimulant to offset the metabolism-depressing effect of such diets.

3. The restoration of blood pressure and dextrose tolerance to normal was a feature of this case.

4. The insulogenic factor has a possible role in the causation of obesity.

502 Park Avenue.

SHOULDER AND ELBOW LESIONS OF THE PROFESSIONAL BASEBALL PITCHER

GEORGE E. BENNETT, M.D.

Associate Professor of Orthopedic Surgery, Johns Hopkins
University School of Medicine

BALTIMORE

Every nation or tribe has a favorite sport in which its people often have more interest than they do in the many more serious vocations of life. The Americans, therefore, being no different from other peoples, have their own particular national sport—the American game of baseball. It has been my good fortune to study our pastime from many angles—as a player, as a fan and as a physician who has endeavored to rehabilitate or advise professional and amateur players.



Fig. 1.—Typical pitcher's shoulder. Appearance at the age of 24; this man began pitching professional baseball at 19.

Of all the members of a ball team, the pitcher is the hero and the player on whom most depends. On many occasions I have been asked to designate the type of shoulder lesion that is disabling to the professional baseball pitcher. My answer has always been that the professional pitcher is subject to all the disabilities of the shoulder to which the average person is, namely subacromial and subdeltoid bursitis, irritation of the

The study of the disabilities of the professional baseball player has been made possible by the cooperation given us by Mr. E. G. Barrow and Mr. George Weiss of the New York Yankees and their associated clubs; also Mr. Larry MacPhail of the Brooklyn Dodgers cooperated.

supraspinatus, irritation of the biceps tendon, traumatic synovitis and all the inflammatory diseases. Needless to say, his professional activities predispose him to the development of disability of the shoulder more frequently than one not engaged in an occupation which requires such excessive physical use of this articulation.

I believe that the symptoms and the pathologic changes of the so-called sore shoulder can be divided into two groups—the anterior and the posterior group. The anterior group, which is the most common, is composed of inflammatory and traumatic lesions of the supraspinatus tendon, the subacromial bursa, the subdeltoid bursa, the biceps tendon and the coracoid bursa.

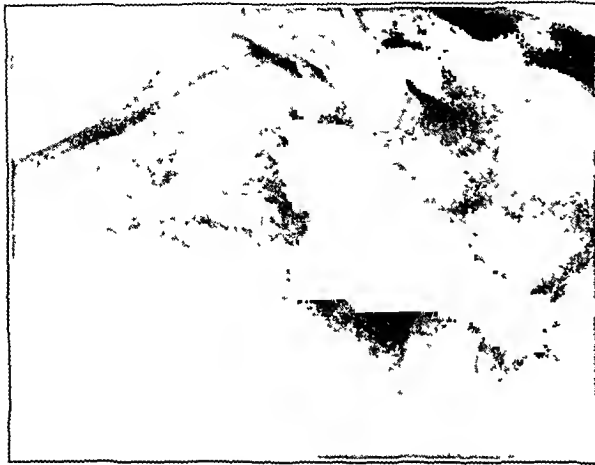


Fig 2—The shoulder of a veteran pitcher aged 29

The rotation of the head of the humerus with its rubbing of the supraspinatus against the acromion may produce a traumatic irritation or a fraying of this tendon. This same motion may produce a similar condition of the biceps tendon. Lesions of the coracoid region are produced by trauma between the head of the humerus and



Fig 3—Typical exostosis of a pitcher aged 23

the coracoid process. At the finish of the "follow through," the arm is across the chest of the pitcher and the head of the humerus is pressed against the coracoid process, thus traumatizing the soft tissues between the head of the humerus and the coracoid process. The overhand pitcher irritates the supraspinatus, and the sidearm pitcher more often irritates the coracoid bursa

The symptoms of the lesions of the anterior group are sensitiveness about the point of insertion of the supraspinatus and a discomfort on abduction of the arm. When the biceps tendon is involved one notes a sensitiveness in the region of the bicipital groove and



Fig 4—Veteran pitcher aged 28. He also had osteochondritis of elbow, shown in figure 10

discomfort when the forearm is flexed against resistance. When these tendons are frayed by trauma actual crepitus may be elicited on active motion.

The treatment of the simple traumatic group is rest and local heat. When there is actual dissolution of the tendons, which become frayed, the biceps may respond to surgical treatment, but I do not feel that one could reconstruct a supraspinatus tendon and expect it to perform the strenuous and accurate function which

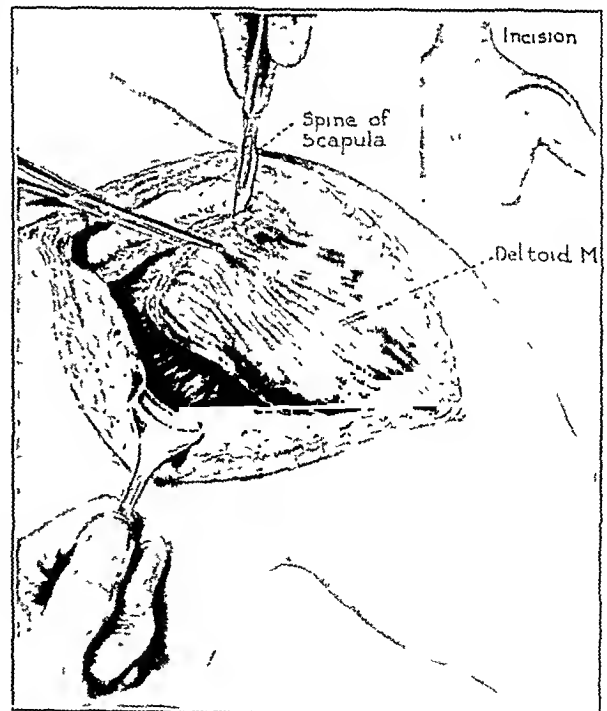


Fig 5—Detaching the posterior deltoid from the spine of the scapula

is required of a professional pitcher. Fortunately, the majority of the traumatic group of injuries respond to the orthodox conservative treatment.

If the history is that of an inflammatory lesion, a search for foci of infection should be made and the proper treatment prescribed. Since professional athletes are human beings, not supermen, general health often

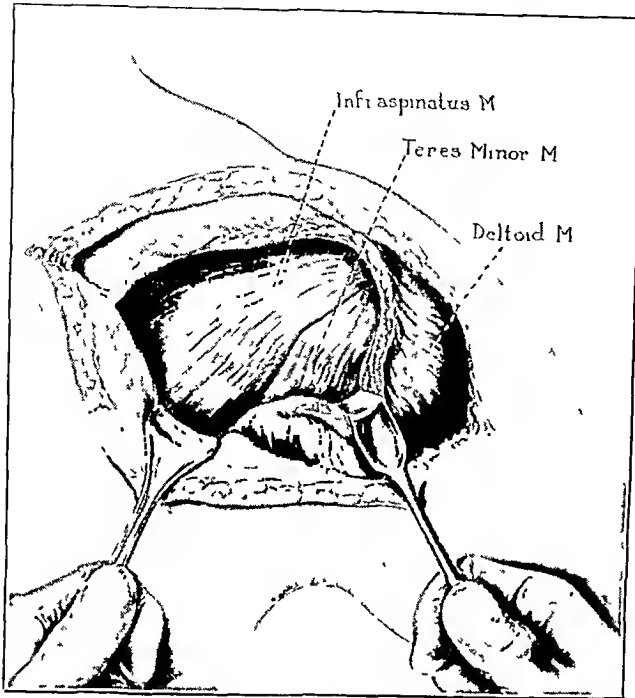


Fig. 6—Exposure of the infraspinatus and teres minor muscles

plays a part in the disability and should be the first thought in the mind of the medical examiner. Frequently, infected teeth or tonsils cause or aggravate the

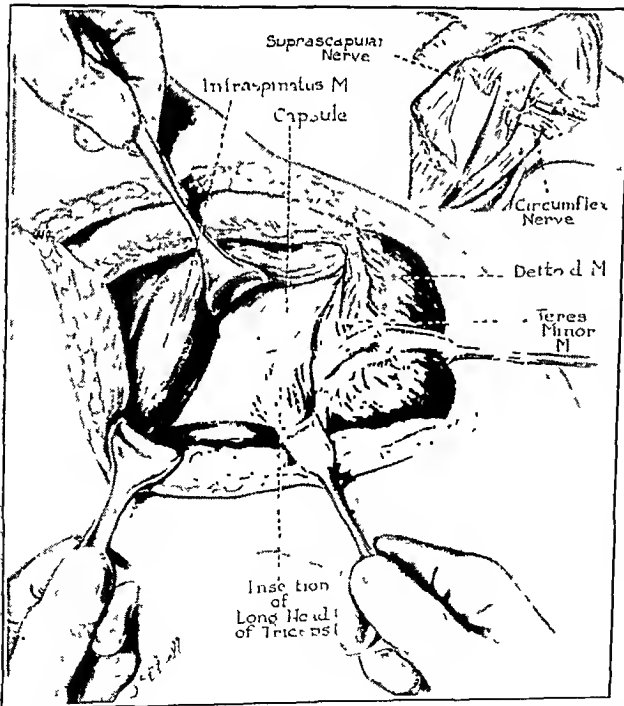


Fig. 7.—Exposure of the posterior capsule of the joint, the infraspinatus and the teres minor muscles are retracted.

so-called sore shoulder. Lesions of the inflammatory group respond to the removal of infection and to an improved general health regimen. Fortunately, one seldom sees a pitcher who is compelled to give up his

profession because of a lesion in the anterior shoulder region.

The lesions that occur in the posterior part of the shoulder are the ones which unfortunately shorten the career of the professional pitcher. In the past few years I have been able to demonstrate a type of lesion in the shoulder of professional pitchers which I do not think one sees in other individuals of the same age period.

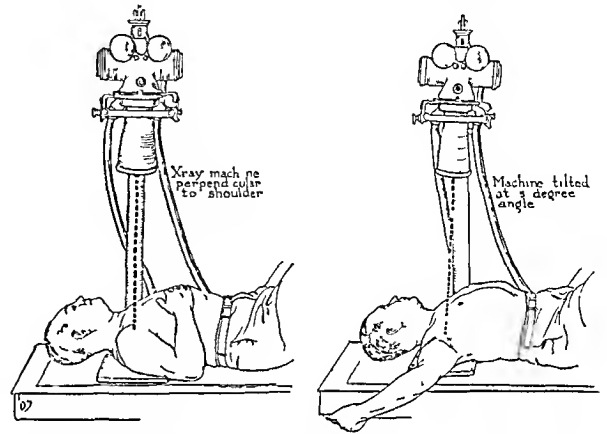


Fig. 8—The exostosis or deposit in the posterior inferior region of the glenoid cannot be identified by the ordinary anterior posterior or posterior anterior view of the shoulder. Our x-ray technician, Mr. W. Ross Mitchell, developed the technic shown here. External rotation of the humerus with tilting of the x-ray tube about 5 degrees is the position which rotates the head of the humerus and the glenoid to a position which throws the thickened area in relief.

Because of the excessive use of the arm and the tremendous pull on the posterior capsule and the triceps tendon, there develops on the posterior inferior border of the glenoid fossa a deposit of bone strikingly similar to the osteoarthritic deposit that one sees in older people. The location of this deposit is such that it produces an irritation of the capsule and of the synovial

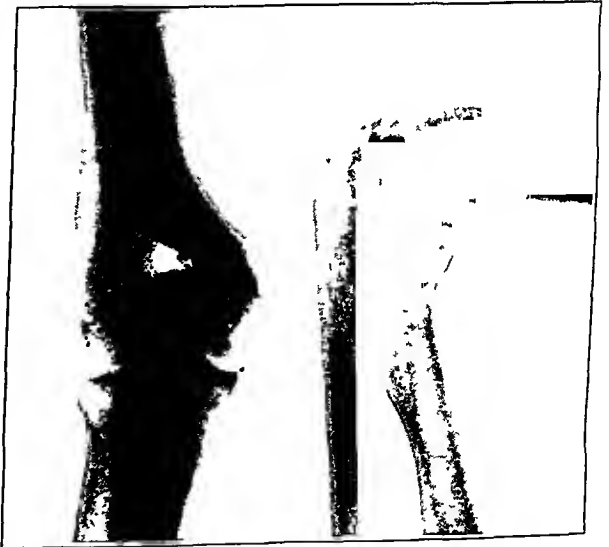


Fig. 9—Typical osteochondritis of the elbow. The patient was operated on in 1925 at age of 26, he continued as a professional pitcher until 1940, a period of fifteen years. Roentgenogram taken at age of 41.

membrane. This exostosis or deposit also produces an irritation of the circumflex nerve with referred pain to the deltoid region. The symptoms are local discomfort and sensitiveness in the posterior shoulder plus referred pain to the deltoid. When the player attempts to throw hard after one or two innings, he suffers so much pain

and discomfort that he is unable to continue in the game (figs. 1, 2, 3 and 4).

Careful observation of the position of the arm and the arc of motion helps in the proof of the cause of dis-

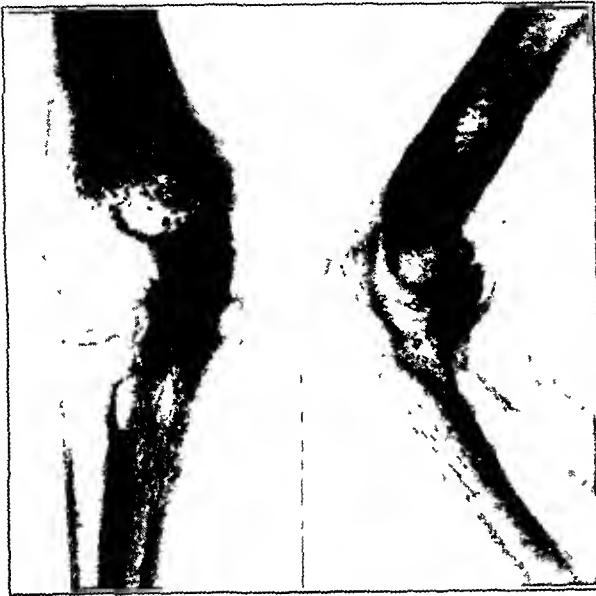


Fig. 10—Veteran pitcher aged 28 with osteochondritis and multiple loose bodies in olecranon fossa

ability. On observing a professional pitcher as he "warms up," throwing a ball easily while he gradually increases its speed, one will notice that when he begins to "stretch" he seems to be trying to throw his arm at the catcher. After the "warm up," he reports that his arm is "loose" and feels fine. This statement is true,



Fig. 11—Typical loose body near internal epicondyle of a pitcher aged 23

because to be effective his arm must be relaxed at the finish of the delivery. When the arm is "tight" the muscles are spastic and effectiveness is lost. One does not have to draw on the imagination to appreciate the tremendous pull on the posterior shoulder as the weight of the arm is swished forward in a flail-like motion obliquely across the body. This constant strain tends to cause the development of a pathologic process in the posterior and inferior margin of the glenoid fossa which is strikingly similar to the formation of the

exostosis in the other joints that have been subjected to excessive strain and overuse. Fortunately, this is not a constant disability of the "veteran." I have examined professional pitchers who after twenty years of active baseball life show no such deposits, while on the other hand I have seen youngsters of 20 or 21 years in whom these same changes have already occurred. They may develop gradually with an increase in severity or may have a sudden onset. The pitcher may be able to tell the day and the pitch when he suffered this



Fig. 12—Osteochondritis of the elbow of a pitcher aged 21.

sudden pain in the back of his shoulder. The pain persists and he can throw "hard" only a few innings and then the local posterior pain plus the referred pain to the deltoid becomes so great that his arm feels "dead." It is a common observation that deposits in other joints may exist for a considerable time, causing no inconvenience. For instance, when a sneeze is said

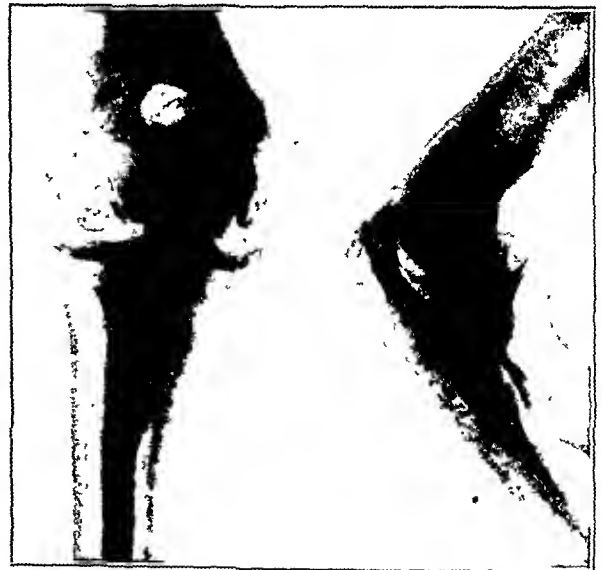


Fig. 13—Osteochondritis of the elbow of a pitcher aged 26, no disability.

to produce an attack of lumbago, the roentgenogram may show deposits which have been years in developing. I do not believe one can say that a sudden strain is responsible for the lesion I am attempting to describe.

The treatment of the exostosis or deposits in this part of the shoulder is difficult, as it is distinctive of the baseball player. It causes no pain or discomfort for normal function of the shoulder, not even in throwing a baseball at moderate speed. Symptoms are produced only when the baseball is thrown hard. Therefore, it



Fig. 14—Osteoarthritis of the elbow of a veteran pitcher

is not a question of having the shoulder perform a normal function but of rehabilitating it to perform again the abnormal function that produced the pathologic process.

If one desires to explore the posterior inferior border of the glenoid at the point of thickening of the margin of the glenoid, it can be done by making a curved incision over the posterior shoulder, detaching the scapular section of the deltoid and retracting it laterally. Then, with safety, one can approach the posterior capsule of the joint by separating the teres minor from the infraspinatus. The infraspinatus muscle protects the infraspinatus nerve, and the retraction of the teres minor carries with it the circumflex nerve. It is now possible to remove the exostosis. My experience has not been sufficient, however, to advocate this operative procedure with the assurance that a baseball pitcher will be able to resume his profession (figs. 5, 6, 7 and 8).

ELBOW LESIONS

The elbow lesions of the professional pitcher fall within the group of so-called osteochondritis and may appear any time during his career. It is not unusual to see loose bodies in the olecranon fossa in youngsters in their late teens who began to pitch for their teams as boys of 12 and 13. Curiously enough, aside from the olecranon fossa and the tip of the coronoid process, these semidetached bodies also appear in the region of the internal epicondyle and cause irritation of the ulnar nerve. Surgical removal does away with all symptoms and restores function so that pitching is possible.

In 1925 I removed a loose body from the olecranon fossa of an athlete who continued as a professional pitcher for fifteen years. The roentgenogram made at

the end of this time (fig. 9) shows what is the typical osteochondritis of the professional pitcher (figs. 10, 11, 12, 13 and 14). A discussion of the etiology and pathology is unnecessary. It is an established fact that trauma of hyaline cartilage produces hypoplasia and the development of loose bodies. As I have stated, this condition is not extremely disabling. A large percentage of the veteran ball players are unable to extend their throwing arm fully, and roentgenograms will disclose that this obstruction is caused by osteophytes or loose bodies. In a large number of cases these loose bodies produce no symptoms.

4 East Madison Street.

Clinical Notes, Suggestions and
New Instruments

THE EFFECT OF ALKALI ON CRYSTALLURIA FROM
SULFATHIAZOLE AND SULFADIAZINE

LEON SCHWARTZ, M.D., HARRISON F. FLIPPIN, M.D., JOHN G. REINHOLD, Ph.D., AND ALBERT H. DOWN, M.D., PHILADELPHIA

Recent medical literature contains many reports of hematuria, oliguria, anuria, pain in the loin and uroliths associated with the use of sulfapyridine or sulfathiazole. These renal complications are due, in part if not entirely, to the presence of sulfapyridine or sulfathiazole crystals in the urinary tract. Certain of these toxic effects necessitate discontinuance of chemotherapy at a time when treatment with these drugs is most desired. We have previously¹ stressed the importance of maintaining urinary outputs of at least 1,200 cc. daily in order to facilitate the excretion of these compounds from the body. At this time we wish to present briefly our observations

Crystal Counts in Relation to the Use of Alkali

Sulfathiazole Treated Group	Without Alkali			With Alkali		
	32			18		
No. of patients ..	93			56		
No. of urine samples ...						
Crystal counts *	Acid, Alkaline, Total,			Acid, Alkaline, Total,		
	%	%	%	%	%	%
0	30.0	2.2	32.2	23.2	41.1	61.7
+	6.5		6.5	10.4	5.1	15.8
++	15.0	1.1	16.1	18.0	1.9	19.4
+++	40.9	4.3	45.2			
Total	92.4	7.6	100.0	61.6	48.4	100.0

Sulfadiazine Treated Group	Without Alkali			With Alkali		
	31			10		
No. of patients	87			51		
No. of urine samples						
Crystal counts *	Acid, Alkaline, Total,			Acid, Alkaline, Total,		
	%	%	%	%	%	%
0	68.9	5.5	74.7	38.0	44.4	83.3
+	9.2	1.1	10.3	9.1	3.7	1.0
++	8.1	1.1	9.2	3.7		
+++	5.8		5.8			
Total	92.0	8.0	100.0	51.9	48.1	100.0

* 0 = no crystals, + = <25 crystals per low power field, ++ = 25 to 100 crystals per low power field, +++ = >100 crystals per low power field

on the effect of alkali on the incidence and number of crystals detected in the urine of patients receiving sulfathiazole or sulfadiazine.

Aided by a grant from the American Philosophical Society From the Committee for the Control of Pneumonia, Philadelphia General Hospital.
1. Flippin, H. F., Reinhold, J. G., and Schwartz, Leon Sulfapyridine and Sulfathiazole Therapy in Pneumococcal Pneumonia J. A. M. A. 116: 683 (Feb. 22) 1941

While studying the comparative therapeutic effectiveness and toxicity of sulfathiazole and sulfadiazine on pneumonia, special studies were carried out on the urine of 100 adult patients. Of this group 50 received sulfathiazole and 50 sulfadiazine. A total of 290 samples of urine were examined, of which 180 (93 sulfathiazole, 87 sulfadiazine) were from patients who received no alkali and 110 (56 sulfathiazole, 54 sulfadiazine) were from patients to whom sodium bicarbonate was administered in an amount equal to that of the drug. In general, the two groups, as regards both drug and alkali, were comparable.

Samples (15 cc.) of urine passed before breakfast were placed in a test tube and sediment was allowed to separate at room temperature for from four to six hours. A drop of urine, removed by means of a pipet, from the bottom of the test tube was examined under the low power of the microscope and crystal counts were recorded on the basis of the average number of crystals of the drug observed in ten separate fields. All samples of urine were tested with litmus and those giving a neutral reaction were included with those classed as alkaline.

As indicated in the accompanying table, the incidence and number of crystals of the drug found in the urine samples were distinctly less in the group of patients receiving alkali together with either sulfathiazole or sulfadiazine. This difference was statistically highly significant (chi square) in the sulfathiazole-treated group but fell short of significance in the sulfadiazine treated patients. In both groups crystals were found more frequently and in greater numbers in acid urine. Patients receiving sulfadiazine showed fewer crystals in their urine than did the sulfathiazole-treated group. This finding is in keeping with previous observations² on the comparative renal toxicity of these drugs.

Crystal counts made by the Addis technic on centrifuged freshly voided specimens indicated the existence of a similar relationship to administration of alkali and to urine reaction, although the total number of crystals found was smaller.

CONCLUSION

It would seem advisable, in order to decrease the incidence and number of crystals of these drugs in the urine, to administer an alkali with sulfathiazole, and possibly also with sulfadiazine.

2031 Pine Street.

REDUCTION OF GROWTH RATE IN GIGANTISM TREATED WITH TESTOSTERONE PROPIONATE

FRED P. CURRIER, M.D.; CHARLES H. FRANTZ, M.D., AND
RAY VANDER MEER, M.D., GRAND RAPIDS, MICH.

During the past five years several authors have suggested that there exists an antagonistic action between certain hormones and those of the pituitary. More specifically it was suggested by von Drigalski and Diethelm¹ that the male sex hormone acts as a physiologic brake on the growth-producing hormone of the anterior lobe of the pituitary gland. They described the use of testosterone propionate in large doses in a case of hypophysial gigantism with rather uncertain effects of the treatment. It would seem that any decrease in the rate of growth would be due either to a decrease in the amount of growth-producing hormone of the anterior lobe of the pituitary gland or to an earlier closure of the epiphysal line. It was suggested by MacCullagh² that testosterone propionate did not increase the rate of the epiphysal closure beyond normal.

The following is a report on the rate of growth in a case of hypophysial gigantism during treatment with testosterone propionate over a period of two years.

REPORT OF CASE

History.—A boy aged 11 years, was referred to us because of mental retardation and gigantism.

The father, aged 50, is living and well. He is the tallest in the family and measures 5 feet 11½ inches (182 cm.). He has four brothers, and the youngest is 5 feet 4 inches (162 cm.) tall. There has been no history of gigantism on his side of the family.

The mother died at the age of 44 of cancer of the uterus. She was 6 feet 1 inch (185 cm.) tall and weighed 198 pounds (89.8 Kg.) when in good health. Her father was 6 feet 3 inches (190 cm.) tall, and he is still living at the age of 66. A maternal uncle was 6 feet 3 inches tall and a maternal great uncle was 6 feet 5 inches (196 cm.) tall. There has been no history of chorea, migraine, insanity, diabetes or heart disease in the family. The mother had had tuberculosis at the age of 20, with no recurrence.

Growth of Patient With and Without Treatment

Treatment	Increase in Height
Eighty-six days with testosterone propionate.....	¾ inch
One hundred and six days without testosterone propionate....	½ inch
Fifty-six days with testosterone propionate.....	½ inch
Forty-nine days with testosterone propionate.....	0
Two hundred and twenty-five days with testosterone propionate	½ inch

The mother had a difficult labor of twenty-four hours following an early rupture of the membranes and was finally delivered by forceps of the patient, who at birth weighed 7½ pounds (3,403 Gm.) and was 24½ inches (62 cm.) tall. He was a bottle-fed child. There was no history of injury and no unusual childhood diseases. He walked at the age of 13 months but was slow in speech development, talking at 3½ years. Evidence of early gigantism was already present at the age of 2 years. At that time he was 39 inches (99 cm.) tall and weighed 32¾ pounds (14.9 Kg.). When 3 years of age, he was sent into the orthopedic clinic of Blodgett Memorial Hospital with inversion of both feet. He was again seen the next year and referred to the pediatric department, in which the observation of mental retardation was made and the fact was noted also that he was microcephalic, the circumference of his head being 19¾ inches (50 cm.). At the age of 10 he was again seen in the orthopedic clinic, and a note was made that he showed considerable increase in the length of all long bones with accentuation of the previously noted inversion of the feet. Roentgen examination at that time revealed normal osseous structure except for a slight abnormality at the epiphysal line of the right ankle. A roentgenogram of the skull showed a shallow pituitary fossa but no evidence of any other abnormality.

On general examination on Feb. 25, 1939 the boy was seen to be unusually tall—68¼ inches (173 cm.). He weighed 121 pounds (54.9 Kg.). He was microcephalic. The hair of the scalp was thin, and there was no pubic hair. The skin was fair and pale. The eyes showed normal coloring of the scleras; the pupils were round and equal, and they reacted to light and in accommodation. Extraocular movements were normal. The fundi and fields were normal. The ears showed no abnormality, although the hearing was decreased. The boy heard a watch on the left side at 2 inches (5 cm.) and on the right at 5 inches (13 cm.). There was no nasal obstruction and no deviation of the septum. The mouth showed normal teeth with occasional caries. The tongue was normal in size and was without tremors. The throat was slightly injected. The tonsils were present. The lungs were clear to auscultation and percussion. The heart was normal as to size, rhythm and sounds. The blood pressure was 108 systolic and 65 diastolic.

2. Flippin, H. F.; Rose, S. B.; Schwartz, Leon, and Domm, A. H.: Sulfadiazine and Sulfathiazole in the Treatment of Pneumococcal Pneumonia: A Progress Report on Two Hundred Cases, *Am. J. M. Sc.* **201**: 585 (April) 1941.

1. von Drigalski, Wolf, and Diethelm, Lothar: Regressive Skeletveränderungen bei hypophysären Hochwuchs, *Klin. Wchnschr.* **16**: 628-632 (May 1) 1937.

2. MacCullagh, E. P.: Treatment of Testicular Deficiency with Testosterone Propionate, *J. A. M. A.* **112**: 1037-1044 (March 18) 1939.

tolic. The abdomen showed no masses or tenderness. The liver, the spleen and the kidneys were not felt. Rectal examination gave negative results.

Both deep and superficial reflexes were normal. The patient reacted normally to pain, light touch temperature, motion and position and vibration.



Fig. 1.—Patient (in center) at the age of 12 years (on May 5, 1939), 70 $\frac{1}{4}$ inches (178.4 cm.) tall. Normal heights for this age range between 50 and 62 inches (127 and 157 cm.). Our patient exceeds the tallest boy in this group by about 7 inches (18 cm.).

The lower extremities showed decided angulation of the right ankle, knee and hip. The right femur was longer than the left. The right calf was $\frac{3}{4}$ inch (1.9 cm.) less in circumference than the left. The right thigh was externally rotated and abducted.

The blood showed 85 per cent hemoglobin. The erythrocyte count was 4,500,000 and the leukocyte count 6,000, with 72 per cent polymorphonuclear leukocytes, 24 per cent lymphocytes, 1 per cent monocytes and 3 per cent eosinophils. Urinalysis showed the urine to be entirely normal. The dextrose tolerance test showed a normal curve. The level of nonprotein nitrogen in the blood was 30 mg., of phosphorus 4.6 mg. and of calcium 8.8 mg. per hundred cubic centimeters. The Kahn reaction was negative. The basal metabolic rate was 26 per cent.

The diagnosis made was (1) gigantism on the basis of pituitary disturbance and (2) mental retardation.

Treatment and Course.—On March 17, 1939 wedge osteotomy at the junction of the neck and shaft of the right femur was done in an attempt to correct the antifixion and coxa valga. The patient made an uneventful recovery.

Treatment with testosterone propionate was started on March 29, in doses of 5 mg. every four days.

On May 5 the cast was removed, and the patient's height was 70 inches (178 cm.). Therapy with testosterone propionate was continued up to July 29, at which time his height was 70 $\frac{1}{4}$ inches (178.4 cm.).

During the next three and one-half months no testosterone propionate was used, and the patient gained $\frac{1}{2}$ inch (1.3 cm.).

On November 13 the boy fell off a chair and broke his right femur. He was hospitalized; traction was used, and later on a cast was applied to the leg.

On March 9, 1940 the cast was removed and the boy was allowed to walk on crutches. His height was then 72 $\frac{3}{4}$ inches (185 cm.). Treatment with testosterone propionate had been resumed on January 29 and has been continued since then.

On May 4 and on June 21 his height was still 72 $\frac{3}{4}$ inches.

On Feb. 15, 1941 he was 73 $\frac{1}{4}$ inches (186 cm.) tall (fig. 3).

As far as we can determine, the orthopedic operation had no effect on the patient's height; nevertheless we submit the figures in the accompanying table as to the patient's rate of growth when he was not in the cast and was not using any orthopedic appliances. The consecutive periods of treatment began on March 29, 1939.

Statistics on heights³ have shown the average height at birth to be 21 inches (53 cm.) and at 13 years of age 59 $\frac{5}{100}$ inches (150 cm.). Thus the average gain for thirteen years is 2 $\frac{9}{100}$ inches (7.4 cm.) a year. Our patient's height at birth was 24 $\frac{1}{2}$ inches (62 cm.) and at the age of 11 was 68 $\frac{1}{4}$ inches (173 cm.). Thus his average gain per year was 3 $\frac{07}{100}$ inches (10 cm.) as compared with the normal 2 $\frac{90}{100}$ inches (7 cm.). While he was under treatment from the age of 11 $\frac{1}{2}$ years to 13 $\frac{1}{2}$ years his average gain per year was reduced to 2 $\frac{1}{2}$ inches (6 cm.). This is $\frac{42}{100}$ inch (1 cm.) less per year than the rate of growth of a normal child and 14 $\frac{1}{100}$ inches (3.6 cm.) per year less than his previous rate of growth.



Figure 2.

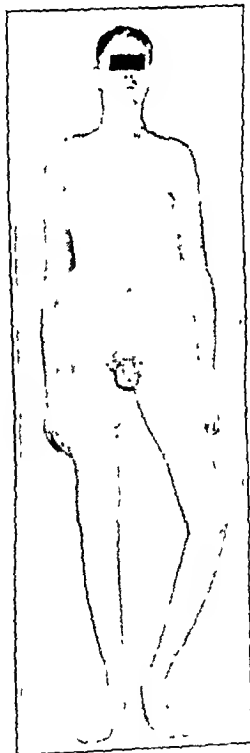


Figure 3.

Fig. 2.—The patient at the age of 12 years shows increased length in all long bones, some degree of microcephalism, prominence of breast tissue, absence of pubic hair but normal development of the testes and the male organ.

Fig. 3.—The patient at the age of 13 years measures 73 $\frac{1}{4}$ inches (186 cm.). There is still considerable prominence of the breast tissue. Pubic hair is present, and the testes and the male sex organ have developed to the size normal for this age. The boy has been treated with testosterone propionate for two years.

CONCLUSION

In a case of hypophysial gigantism treatment with testosterone propionate in small doses apparently had a deterrent action on the rate of growth over a period of two years.

626 Medical Arts Building.

3. Baldwin and Wood: Children's Bureau, U. S. Department of Labor.

Special Articles

NEUROSURGICAL TREATMENT OF CERTAIN ABNORMAL MENTAL STATES

PANEL DISCUSSION AT CLEVELAND SESSION

EDITORIAL NOTE.—Following is a condensed report of a panel discussion on the neurosurgical treatment of certain abnormal mental states, presented before the Section on Nervous and Mental Diseases at the annual session of the American Medical Association in Cleveland. The technique was relatively new for the presentation of a medical subject. DR. PAUL C. BUCY, Chicago, acted as moderator. The following physicians took part in the discussion:

WALTER FREEMAN, Washington, D. C.
M. A. TARUMIANZ, Farnhurst, Del.
THEODORE CHARLES ERICKSON, Montreal.
J. G. LYERLY, Jacksonville, Fla.
H. D. PALMER, Philadelphia.
ROY R. GRINKER, Chicago.

Following the discussion, opportunity was granted for questions from various members of the group to one another and also from those in attendance on the meeting. The condensed report has been edited in order to avoid duplication and to eliminate confusing statements. The discussion, however, reflects the nature of the method of presentation.

DR. WALTER FREEMAN, Washington, D. C.: Prefrontal lobotomy consists in the surgical interruption of certain tracts in the white matter of the frontal lobes. It has been employed in the treatment of some of the intractable psychoses and neuroses. First reported by Egas Moniz of Lisbon in 1936, the operation was introduced into this country by Freeman and Watts and was later modified by them. It has been employed by them in some 80 cases during the past five years. The best results have been obtained in cases of involutional depression and the obsessive compulsive states.

The technique is, briefly, as follows: The line of the coronal suture is marked out on the scalp, an incision is then made over this suture, and the skull is trephined 5 cm. above the zygoma. When hemostasis has been secured an instrument is introduced into the opening and the white matter is cut in the plane of the coronal suture. This is most important because if the incision is made in front of this plane the desired results are not obtained. If one gets too far back there is too much mental dulling; if one slips down into the middle fossa there is bleeding, and if one gets too near the midline one may catch the anterior cerebral artery.

The result of the operation is marked attenuation of the impact of the psychotic ideas on the patient. The ideas may continue of their own momentum but the affect is bleached. It is as though the patient were no longer interested in the ideas, whether delusional, hallucinatory or obsessive. He loses interest in himself.

I think that these results are obtained because this operation cuts across a band of fibers connecting the thalamus with the frontal lobe. As a result the nucleus medialis dorsalis of the thalamus degenerates. Following the operation the cortex is histologically intact. Its lamination is well preserved. However, there is some atrophy of the frontal pole postoperatively, as I have demonstrated twice by pneumoencephalography.

In the electroencephalogram there are no distinct changes seen between the preoperative and postoperative records. With the intelligence tests that I have used there is no distinct difference between the results before operation and two weeks after operation in some 40 cases. The same holds true for the Rorschach test. Other personality tests administered later on indicate a widening of the horizon of the individual, lack of preoccupation with self, a diminution in the neurotic tendency and a replacement of introversion by extraversion.

Of the 80 patients 20 are regularly employed, 22 are keeping house, 7 are partially employed and only 5 are in institutions. There have been 3 operative deaths in the series, all occurring among the first 30 patients.

I think on the basis of observation of these cases that the frontal lobes are concerned with foresight, that is, with looking into the future, and with the consciousness of the self. The patient loses interest in himself following operation. He is no longer upset by the idea that he has syphilis or that he is being poisoned, spied on and the like. The ideas continue of their own momentum for a while. The mannerisms and compulsions and other motor activities persist even longer.

From the social point of view these patients show the maximum change. As a rule they are a little cheerful, a little outspoken, sometimes rather tactless. They say the first thing that comes into their minds without weighing the question as to what the effect will be on the listener; hence they are sometimes rather undignified, especially in the medium of the family. The reduction in the consciousness of the self applies equally well to the bodily organs. Patients who had been confirmed hypochondriacs no longer are interested in the functioning of their organs. Their lack of concern and their lack of self consciousness is outstanding.

It is good for us to have a little self consciousness, it is good for us to be a little concerned over the future, it is good for us to be able to contemplate and to speculate, because these are some of the highest of human traits; but when concern over the future leads to blocking of all action, when we become self conscious to the extent that we believe we are being poisoned or followed, when we contemplate and speculate way off in the stars some place and lose interest in our dinners and the comic strip; and when thoughts come into consciousness with the intensity of sound, then prefrontal lobotomy may offer something of importance in the handling of these serious neuroses and psychoses.

MODERATOR BUCY: Dr. Freeman, you mentioned various possible complications, such as damage to the anterior cerebral artery, getting down into the temporal fossa or perhaps cutting a little too far posteriorly and producing a vegetative state. How often do such complications occur?

DR. FREEMAN: There have been 2 patients suffering from hemiplegia, 1 of them due to cutting the anterior cerebral artery and the other to getting the lesion too far back in the basal ganglion. There are 5 patients who are necessarily institutionalized, some of them because the operation was inadequate and some because it was too extensive.

MODERATOR BUCY: Do you have any reason, other than the reasons you have stated, for attributing the effect to interruption of afferent pathways from the thalamus to the frontal lobes rather than interruption of pathways connecting the frontal lobes to other parts of the brain?

DR. FREEMAN: I have studied some sections behind the plane of the incision and have found relatively unimportant degenerations in these fibers from the cortex to the more basal portions.

DR. J. G. LYERLY, Jacksonville, Fla.: Dr. Freeman, you stated that with the means of testing that you used there has been no evidence of damage to the patient

TABLE 1.—*Diagnosis and Postoperative Results in Dr. Lyerly's Cases*

Diagnosis	Greatly Im- proved	Moder- ately Im- proved	Slightly Im- proved	Tempo- rarily Im- proved or Failures	Total	Em- ployed
Involuntal melancholia . . .	14	4	4	2	24	13
Manic depressive . . .	2	3	1	2	8	2
Schizophrenia . . .	.	..	1	..	1	..
Psychoneurosis with de- pression	2	3	..	.	5	3
Psychopathic personality	—	—	.	1	1	..
Total..	18	10	6	5	39	18
Percentage	46.2 (71.8)	25.6	15.4	12.8		46.2

Seventeen of these patients were operated on at the Florida State Hos- pital at Chattahoochee.

psychologically. Does that mean you think there are other means of determining damage that you have not used?

DR. FREEMAN: Nichols and Hunt devised some special technic, using arithmetical progressions and also Halstead's equivalent and nonequivalent stimuli, and in their case of bifrontal lobectomy they were able to discover defects, although their patient had an intelligence quotient of around 120. I do not say that there are no defects in these persons. My idea, and I think it is shared by others, is that the defect is in the motivation rather than in the equipment. In other words, as Brickner originally stated, the process which enables us to add two and two and find that the result is four is different from the motive that causes us to add two and two and find out the result is four. These patients are satisfied before they reach perfection.

RESULTS IN THIRTY-NINE CASES

DR. LYERLY, Jacksonville, Fla.: In performing this operation I remove a button of bone in the prefrontal region of the skull with a trephine about over the middle of the second frontal convolution, halfway between the tip of the frontal lobe and the Rolandic area. A short incision is made in the cortex at this point and a lighted brain speculum is inserted. Then by blunt dissection transverse cuts are made through the white matter. I try not to go through the cortex at any other point so as not to injure any vessels or get any bleeding. The incision is made just anterior to the anterior horn of the lateral ventricle. Since doing this operation first in 1937 there have been 39 cases up to 1941. Most of the patients were operated on two or more years ago; 11 in 1937, 15 in 1938, 8 in 1939 and 5 in 1940. There were 17 men and 22 women. The average age of the patients was 49 years, varying from 26 to 78 years. The majority, 24, suffered from involuntal melancholia. The average duration of the symptoms was forty and six-tenths months, ranging from three months to twenty-seven years. The average gain in weight after operation was 30½ pounds (14 Kg.). The greatest

gain in weight in one case was 97 pounds (44 Kg.). That patient doubled her weight. She weighed only about 90 pounds (41 Kg.) before operation.

In classifying these cases the diagnosis was made by one or more psychiatrists in addition to myself, and frequently the services of a psychologist were used in making psychometric tests before and after operation. I have grouped these cases into greatly improved, moderately improved, slightly improved and temporarily improved. By "greatly improved" I mean the patients were restored to practically normal individuals, were able to be discharged from the hospital and became socially adjusted and returned to work. By "moderately improved" I mean that the patients became socially adjusted individuals and were discharged from the hospital but for various reasons they did not go back to work. Some of these patients were on insurance. By "slightly improved" I mean that the patients could not be discharged from the hospital, but their depression and mental suffering were greatly relieved and they were no longer such a problem in the hospital. They no longer required tube feeding. By "temporarily improved" or "failures" I mean the ones that improved only temporarily and later relapsed or in some cases went from a depressed state to a manic or hypomanic state. The "greatly improved" formed 46.2 per cent, and 25.6 per cent were "moderately improved." Thus in 71.8 per cent of the cases the operation produced definitely beneficial effects. The slightly improved formed 15.4 per cent, and the temporarily improved or failures 12.8 per cent.

In table 2 I have correlated the duration of the symptoms and the postoperative gain in weight with the degree of improvement. The patients who made the best improvement are the ones who had the shorter duration of symptoms and the ones who had the largest gain in weight after the operation.

DR. ROY GRINKER, Chicago: I must confess that I do not understand the correlations indicated. I do not see a great deal of difference in the average duration of symptoms of the "greatly improved" and the "slightly improved." Gain in weight is merely evidence of improvement in the psychosis and, no matter what you do, when the psychosis is improved the patient gains weight, so I do not see the significance of the correlation.

TABLE 2.—*Correlation of Postoperative Results with Average Preoperative Duration of Symptoms and Average Postoperative Gain in Weight in Dr. Lyerly's Thirty-Nine Cases*

	Greatly Improved	Moder- ately Improved	Slightly Improved	Temporarily Improved or Failures
Duration of symptoms. . .	14.6 mos.	53.2 mos	15.3 mos.	21 mos.
Gain in weight	38.3 lbs.	32.1 lbs.	12 lbs.	—5 lbs.

DR. LYERLY: These average figures do not represent the actual picture. In the majority of cases the shorter the duration of symptoms, the greater the improvement.

DR. GRINKER: It also appears to me that in some instances the duration of the disease prior to operation has been very short.

DR. FREEMAN: I have been accused of that too.

DR. LYERLY: No, I would not say that. I have adopted the plan that the psychiatrist turns the patient

over to me for operation when he thinks that is the best procedure to use or that other methods have failed. Many of the patients have had either insulin or metrazol shock therapy. In some of the cases the psychiatrist thought that shock therapy was not indicated or would be too dangerous and that the operation would be the less severe procedure.

DR. GRINKER: I note that one patient had been ill for only four months, another for six months and another for seven months. It seems to me that these are exceptionally short periods to test out other methods of therapy.

DR. LYERLY: I agree that four months was a rather short time but that was one of the early cases. I do not think we would operate on a patient that early now. That was in 1937 or 1938, and at that time we did not know exactly what was the best procedure to follow.

DR. FREEMAN: Dr. Lyerly, what do you mean by "improvement"? Does that take in only the subjective complaints of the patient or is it also the opinion of the family? Have you had any patients who are not improved or are real problems because of their destructive, irrational behavior following operation?

DR. LYERLY: By "improvement" I mean that the patients came out of the severe mentally depressed states and became happy, cheerful and slightly elevated. A few of the patients became too elated and had to be institutionalized. These I put in the failure group. Some of them were inclined to spend money that they did not have and for that reason I think they were not improved to the point that would be most pleasing to the family.

Probably the reason some of these patients developed too much of the elevated type of personality was that too much of the prefrontal lobe was disconnected from the rest of the brain. For that reason I have done some of the operations bilaterally but more anteriorly. In 4 cases I have done the operation only on one side with very good results and with a good gain in weight after the operation, but usually such an operation is not extensive enough.

DR. M. A. TARUMIANZ, Farnhurst, Del.: How soon after operation did you notice some improvement?

DR. LYERLY: Immediately after the operation. The patient frequently wakes up with a smile on his face or is happy and more elated, more relaxed. However, during the first few days or weeks he is in a confused state, with considerable impairment of memory and disorientation.

DR. TARUMIANZ: Is it your experience that forty-eight or seventy-two hours after the operation they show definite delusions of the former nature?

DR. LYERLY: Occasionally they may have a few of the old symptoms, but as a rule they do not. During the confused period they are usually more or less incontinent. They lie listlessly in bed. Sometimes they are inclined to pull the bedding off the bed or to get up and wander around the room. They frequently have to be restrained. They forget that they have been operated on. But within a week the memory returns and they do not recall anything that happened during that confused period. Their own usual type of personality then returns and persists. They usually are out of bed in about two weeks and frequently out of the hospital shortly thereafter.

DR. H. D. PALMER, Philadelphia: Were all of the 24 patients with involuntional melancholia subjected either to metrazol or to electric shock therapy and had such therapies failed before this operation was attempted? I note a 60 per cent recovery rate in your involuntional melancholia group following operation, whereas with metrazol therapy one can anticipate about a 73 per cent recovery rate in these cases and with electric shock about an 85 per cent recovery rate.

DR. LYERLY: Most of them have had either insulin or metrazol before operation, but not all. One patient had been in the hospital with a severe depression for over four years. The operation resulted in only a slight improvement. I think her severe symptoms had been of too long duration and I probably wouldn't operate on her today.

DR. TARUMIANZ: I don't agree with you, Dr. Lyerly, about duration. I have had cases of twelve years' duration and still the patients recovered after operation and went home.

DR. LYERLY: One patient was a rather old man with a severe agitated depression. All he would say was "Send me to the electric chair and get it over with." He was in constant motion.

DR. FREEMAN: His condition was too bad for shock therapy?

DR. LYERLY: I thought it was and regarded the operation as a less severe procedure. Following the operation he could have been discharged from the hospital, but he hasn't any home. He gained 91 pounds (41 Kg.).

DR. FREEMAN: My record is 130 pounds (59 Kg.) gained.

MODERATOR BUCY: Dr. Grinker, I should like to ask if you feel that these large gains in weight, such as 90 pounds and 130 pounds, can be attributed entirely to improvement in mental symptoms or are they possibly on a physiologic basis quite apart from the mental symptoms?

DR. GRINKER: I think there is a very strong possibility that those excessive gains in weight are due to some disturbance in the cerebral centers. Particularly one might imagine traction on the hypothalamus or bleeding in the neighborhood. It is the moderate gain in weight that is so characteristic of improvement in the anxiety states to which I had reference.

DR. FREEMAN: I had one experience in which the anterior cerebral artery was injured, resulting in softening on the mesial aspect of the left hemisphere. The patient ate very eagerly. In a period of four hours she consumed 4,600 calories and three quarters of a pound of chocolate candy before she vomited—and was immediately ready for more. I think that is definitely a type of morbid hunger such as is found in some cases of frontal lobe disease. However, in most instances I believe that these patients get so much more pleasure out of their bodies, out of the matter of eating, out of the process of bathing, and enjoyment in other fields too, that the gain in weight is merely an expression of their contentment with existence as it is. The girl who gained 130 pounds after operation had lost nearly 100 pounds beforehand. She had starved herself through the delusion that the food was being poisoned.

DR. LYERLY: One woman aged 59 had suffered from a severe depression for over a year and been treated

in various places before being committed to the state hospital. Following the operation she made a good recovery. Her husband had a stroke and became paralyzed on one side about two years after the operation. Since then she has gone to work and earned their living. She gained 36 pounds (16 Kg.).

One man had a severe traumatic neurosis, suffered from headaches and was addicted to alcohol. He said he drank because he was worried, depressed and afraid all the time. After the operation his headaches disappeared. He has not drunk any since the operation. He says he does not worry and therefore sees no need for drinking. This man has been working regularly since the operation. Before the operation he was out of work half the time.

DR. FREEMAN: I operated on 2 alcoholic addicts and they both got drunk before they left the hospital.

DR. LYERLY: I have done forty-four operations in all and there have been no deaths from the operation, there have been no complications such as paralysis, no aphasia, nor other signs of organic brain damage that could be demonstrated except for these mental changes. Three patients each had a slight convulsion after operation. One had a convulsion during a period of influenza with a temperature of 103 F. Another had a slight convulsion in a hypomanic rage. And another patient had a slight convulsion without any known cause.

EIGHT CASES OF INVOLUTIONAL MELANCHOLIA AND TWO OF SCHIZOPHRENIA

DR. TARUMIANZ: About three and one-half years ago Dr. Francis Grant and I decided to present this particular type of more drastic approach to our board and obtain its sanction to proceed with such operations in a state hospital in Delaware. Thus we selected, with the help of Dr. Freeman, 10 cases. Eight of them were of the involutional melancholia type, and 2 of them were of the schizophrenia type with involutional changes. These patients had all been in the hospital for two or more years and some were psychotic for some time before being committed to the hospital. The youngest was 37 years of age, the oldest 66. They were all women with 1 exception. They were all much deteriorated. Most of them were at times extremely agitated and deeply depressed. Seven of the 10 had suicidal tendencies. Two of them had attempted to commit suicide on many occasions. One was quite emaciated because of her unwillingness to take nourishment. Of the 10, 2 have died. One died from post-operative hemorrhage four days after the operation. One died two years after the operation from cerebral hemorrhage. Seven returned home a few months after operation and became fully adjusted, with slight euphoria and very slight unreasonableness, perhaps due to lack of inhibition. One, not having a home, is still in the hospital doing very well. Of these 10 patients, 7 have become fully adjusted socially and mentally and 2 are working in their offices as they did before their illness. With such results one cannot help but consider prefrontal lobotomy as an adequate type of approach in chronic cases after all other types of conservative as well as semidrastring methods have been tried. However, I believe that metrazol treatment is more drastic than prefrontal lobotomy, even though I have never seen a death from metrazol in our hospital and we have seen one case of postoperative death from lobotomy.

From an economic point of view I should like to give some figures as to what this may mean to the public. We have come to the following conclusion with regard to our own cases: In our hospital there are 1,250 cases and of these about 180 would be suitable for such an operation. In our hospital these patients could be operated on for \$250 per case. That will constitute a sum of \$45,000 for 180 patients. Of these we will consider that 10 per cent, or 18, will die, and a minimum of 50 per cent of the remaining, or 81 patients, will become well enough to go home or to be discharged. The remaining 81 will be much better and more easily cared for in the hospital. Thus the hospital will be relieved of the care of 99 patients. That will mean a saving of \$351,000 in a period of ten years. I believe that, these figures being for the small state of Delaware, you can visualize what this could mean in larger states and in the country as a whole.

MODERATOR BUCY: Dr. Tarumianz, in the light of Dr. Lyerly's experience, don't you think it more than likely that your figure of a 10 per cent mortality is unduly high?

DR. TARUMIANZ: I fully agree with you and possibly in the next 25 we might not have a single death. However, we are taking the worst situation that might occur. So far I have not seen a single case that has not responded favorably except those in which death occurred. Two days before I left the hospital I saw 5 of the 7 who are at home and they are still well after three, two, and one and one-half years. About ten days ago Dr. Grant operated on 2 patients with schizophrenia. This is the first time that we have operated on dilapidated schizophrenic patients with long hospital duration after all the shock therapy failed to accomplish anything. One had been quite a problem in the hospital because of her very disturbed condition and her impulsive violence, at times even trying to commit homicide. About forty-eight hours after the operation this woman requested newspapers and magazines. The other 1, who had been mute during nine years of hospital residence, having a catatonic type of schizophrenia, requested a beautician to come and give her a manicure.

MODERATOR BUCY: Recently I have seen some patients diagnosed as suffering from dementia precox, individuals who were particularly agitated and difficult to handle, who were very filthy in their behavior and on whom this operation or some modification of it was performed. They have been transformed into much quieter, almost vegetative individuals. They are much cleaner; they are much easier to take care of. Have you had any experience with such cases and do you believe that the procedure in such a situation would be justified?

DR. TARUMIANZ: I am not ready to answer your question because we took these 2 cases of schizophrenia just ten days ago and have hardly had sufficient time to answer your question.

DR. FREEMAN: I think I can answer that question to some extent. The schizophrenic patients after operation look like patients with dementia precox and talk like them but they do not feel like them. They are no longer particularly interested in themselves and their hallucinations or delusions. The behavior of these patients often shows no particular change for some little time. There are three stages in the recovery: first,

the bleaching of the affect; second, the disappearance of ideas, hallucinations, delusions and so on, and finally the clearing up of motor manifestations.

DR. GRINKER: I wonder if we should worry too much about the economic costs and figures, for these patients are returned home and the cost is now borne by another agency, namely the home rather than the state, which in the long run makes very little difference.

DR. TARUMIANZ: I do not agree with Dr. Grinker, because those patients who have returned home have not become a burden to their families. The women have assumed the responsibilities of their housekeeping, while before the families had to hire housekeepers. Two of them have obtained their former jobs.

DR. GRINKER: I have a second question which I should like to ask Dr. Tarumianz. The amount of attention and interest in the long hospitalized, dilapidated schizophrenic patient is practically nil. Now you have a new operation and you are enthusiastic about it. You bring your patient into the hospital ward. You operate on him. You supply him with nurses. You pay a lot of attention to him. You have brought to bear on this patient a tremendous amount of psychologic care which he did not have before and you get some results. I should like to know how you can determine that it isn't the effect of your new psychologic interest in this patient and not the operation you perform.

DR. TARUMIANZ: We had that on our minds and our first patient had a private graduate nurse at all times prior to operation. She was taken to the occupational therapy department by her private nurse and she was taken to the library; yet she showed no signs of interest because of her agitation, depression and suicidal tendencies. I doubt very much that you are right in saying that we are going to show such a vast change in our treatment of patients who have had lobotomy. As a matter of fact, we do not have any time in which to give such treatment, as improvement occurs in twenty-four or forty-eight hours.

DR. FREEMAN: Also aren't your patients previously treated rather intensively, say, with either metrazol or insulin?

DR. TARUMIANZ: They have all been given all available treatment.

DR. FREEMAN: We have tested out the effect of both operative shock and suggestion in the recovery of these patients. Some patients have been operated on in two stages. The first operation has been done under local anesthesia with all of the ritual of the operating room, the caps, masks and gowns, the drilling of the skull and the operation itself but without relief. Yet the second operation on the other side has given relief.

REPORT OF FIVE CASES OF SCHIZOPHRENIA

DR. PALMER: In the use of the operation of frontal lobotomy at the Pennsylvania Hospital, we have preferred to work in the field of the hopelessly deteriorated patients who have failed to respond to every treatment over a period of years. Seventy per cent of all schizophrenic patients fail to respond to any method of treatment, whereas, as I said in commenting on Dr. Lyerly's material, the involuntal melancholias show 70 to 73 per cent recovery with the metrazol treatment and about 85 per cent with electric shock treatment; therefore, in choosing this chronic schizophrenic group for study we were taking the most unlikely group. Dr.

Edward A. Strecker, Dr. Francis C. Grant and I reported a study of frontal lobotomy in five cases of deteriorated schizophrenia before the American Psychiatric Association in May of this year and the material I should like to discuss here is an abbreviated form of that presentation.

There are 5 cases in our group, 4 women, 2 single, 1 divorced and 1 married, and 1 single man. The range in age is from 25 to 39 years. The shortest preoperative duration of psychosis was five years and the average was more than ten years. The briefest postoperative observation period was one year and the longest two and one-half years. The psychotic patterns were basically schizophrenic, but the group was distinguished by the fact that the psychotic life was not on a negative, passive level but tended to be strikingly violent, disturbed by vivid hallucinations, motivating apprehension, fear, anxiety, suicidal attempts, attempts at self mutilation, destructiveness, aggressive acts, homicidal attacks and assaultiveness of tremendous violence.

Partly in answer to Dr. Bucy's question about the application of this operation to the hopelessly schizophrenic, and partly to present the favorable results in what Dr. Freeman calls "the forgotten patient in the back wards," I would like to give the details of these cases. I also will bring out, in answer to the question raised by Dr. Grinker, the fact that these patients were not neglected before operation but were subjected to all kinds of helpful treatment, both psychologic and physical, over a period of many years.

The first patient was a woman aged 39, a divorcee, ill with schizophrenia for twelve years before operation, who had been under our observation for seven years. The postoperative period has been twenty-two months. The psychosis was characterized by excitability and impulsive violence, several suicidal attempts, refusal to eat, and very distressing auditory and tactile hallucinations. In fact, her distress was so great that she begged that both auditory nerves be cut to eliminate the abusing voices and that a mutilating sexual operation be done to remove the distress of tactile hallucinations involving the sex organs. Deterioration was obvious in that she had apparently had no intellectual life during the last seven years, whereas prior to the onset of her illness she had graduated from college, had a real interest in literature and was adept at languages.

She was given narcosis treatment in 1937 and failed to respond. Following that she was given insulin therapy, having fifty-one treatments with forty-two comas. There was a slight temporary improvement, but she relapsed so severely that insulin therapy was repeated after nine months. This time she was given forty insulin injections with twenty-three comas. No improvement followed this treatment. After seven months she was given eighteen metrazol convulsions and three azoman (3-ethyl-4-cyclohexyl-1,2,4-triazol) convulsions; no benefits were derived from these methods. Frontal lobotomy was performed by Dr. Francis C. Grant on June 20, 1939. The immediate result of the operation was a serene mental attitude with rather a remarkable talkativeness. After three months she was allowed to go home with a nurse, and since that time she has been living in a relatively satisfactory social adjustment, without the nurse, at home. She goes to the opera and the theater, rides horseback, has resumed her interest in languages and in literature and has learned painting and sculpture since the operation.

There is, however, a somewhat vague forgetfulness regarding unimportant things. She has a mildly distorted sense of time relationships. Her naive attitude toward temporal orientation is illustrated by the fact that although she has been sick for longer than thirteen years she believes that she has been ill for a year and is disturbed somewhat by the fact that she has been out of circulation for "twelve whole months."

She states that the operation was unnecessary because her illness was very mild; that doctors always make a great fuss about things anyway and they operated on her without justifiable cause. She has gained 40 pounds (18 Kg.). A severe hypotension, which existed prepsychotically as well as during the course of the psychosis, has been improved to the point where the blood pressure is now approximately normal. She at times shows a little tendency to make ridiculous jokes and to see the funny side of things in a slightly distorted fashion.

The second schizophrenic patient was a woman aged 26 who had been psychotic for twelve years before operation and had been observed by us for five years before operation. She has been seen for fifteen months postoperatively. Prolonged endocrine therapy, narcosis treatment and insulin therapy with forty or more periods of coma had brought about no improvement. The psychosis was characterized by enormous fear of kidnapping, violent assault, and so on. She became so alarmed that she set the house on fire on occasions, preferring to die in the blazing building than to be kidnapped and tortured. She attempted to jump out of windows. On occasion she smashed all the furniture in the house, attacked nurses with tremendous violence and was restrained with great difficulty.

Frontal lobotomy was performed by Dr. Grant in November 1939. The immediate results were very encouraging. The patient was talkative, pleasant, affable, cooperative in an extreme degree. Her appetite, which had been almost nil before the operation—in fact she had required artificial feeding—suddenly became exaggerated, and in the first six months postoperatively she gained 49 pounds (22 Kg.). She read books with her nurse, worked at arts and crafts, and manifested interest in her environment, going for rides and walks and enjoying relatively simple things. It was not felt that she approached her prepsychotic level of intellectual interest. An attack of very virulent pneumonia resulted in death eighteen months after the operation.

The third patient, a single man of 35 who had been under the observation of psychiatrists at the Pennsylvania Hospital for six years prior to operation and for one year after operation, had catatonic schizophrenia. His behavior was of the same assaultive, violent, impulsive, homicidal character. He attempted to mutilate himself. He burned his skin frequently with cigarettes, beat his head against the wall, was incontinent and untidy.

Narcosis followed by typhoid vaccine, insulin treatment and sixteen metrazol convulsions all failed to bring about anything but a transient improvement. Operation April 25, 1940 by Dr. Grant produced a high degree of affability and cooperativeness, complete freedom from violent outbursts, and freedom from the aggressive assaultive attacks. The patient began to renew his interest in card games and checkers and in occupational therapy. During this postoperative year, however, he has remained on a relatively simple level.

Although he goes home occasionally to have dinner with his family he is passive, extremely suggestible and accepts with entirely uncritical attitude the hospital management.

The fourth patient was a woman of 32 under observation because of her psychosis for thirteen years prior to operation and for fifteen months after operation. The onset of the illness was typical, with withdrawal and quiet preoccupation. Gradually there appeared hallucinations, which increased in acuteness and in their distressing nature until she became assaultive, violent, destructive and on one occasion attempted suicide by jumping out of the window. The restlessness was so intense that exhaustion seemed inevitable, and she was several times given narcosis as a means of controlling the agitation and excitement. In 1937 she was given insulin therapy and had forty-six treatments with thirty-four comas. She gained a great deal of weight during this treatment but showed no mental improvement whatever. She was given a second course of insulin therapy seven months later with no improvement.

She was operated on by Dr. Grant, Jan. 15, 1940. The immediate postoperative results were not very encouraging. She remained quiet, entirely passive, very suggestible. Her interest could be aroused for temporary periods, but she quickly lapsed back into what appeared to be preoccupation with fantasies and possibly with hallucinations. However, in the fifteen months since operation she has made very striking improvement. She has gained 45 pounds (20 Kg.), has lost her fatigability, seems more energized. She now goes swimming, bicycling, horseback riding, does very skilful weaving and knitting, and has taken up sculpture and painting, at which she was very competent in her prepsychotic life. She apparently has lost none of the skill which seemed to have disappeared entirely through schizophrenic deterioration. She has learned new games and has taught them to others. There are still, however, periods of preoccupation. She does not resent the intrusion of the doctor in the fantasy life, quickly comes back to reality and appears to have insight into the fact that she is drifting off into fantasy and that is not wholesome. The time sense of this patient is peculiarly distorted. She, like patient 2, is astonished to learn that she has been sick longer than a few weeks. In talking with the nurse she said that she might have been ill for one year. Actually it is more than fourteen years. She is interested in what has happened to her friends, how many of them have married and what they are all doing.

The anticipation of simple things is quite interesting. She wants an ice cream cone or she wants to go for a walk. She wants a dog. She wants to go riding in the car. The intellectual level seems relatively simple as far as her own initiation of interest is concerned, and yet when she is involved in a discussion of more adult things she is normally intellectual.

The fifth patient was a woman aged 25 who was under psychiatric observation for five years before the operation and for two and one-half years after the operation. There was a long history of educational and social maladjustments, years of moral laxness, rudeness, resentment, suspiciousness, obstinacy and irritability before the psychosis. Shortly after the onset of the psychotic phase she became paranoid and had ideas of reference, delusions and auditory hallucinations. There were episodes of violence and destructiveness. She attempted to commit suicide by setting fire to her clothing and by cutting her wrists.

Narcosis treatment of ten days' duration produced no improvement. Insulin therapy was given. She had fifty-one comas, but there was no benefit. Because of the tremendous difficulty in management, the increasing excitability and the destructiveness, frontal lobotomy was performed by Dr. Grant, Oct. 14, 1938. In the immediate postoperative phase this patient also showed little improvement. Gradually over a period of two and one-half years the improvement has become very substantial. She obtained a position one year after the operation as a hostess in a resort and functioned very satisfactorily. She learned to play golf and was able to enter into highly competitive golf games and come off reasonably well from the score standpoint.

One year ago she was married and since that time has gone through a normal pregnancy and delivery. She seems to have retained all of her intellectual capacity, and the comparison of psychometric tests before and after operation shows no change except that the Rorschach test shows a more normal response after the operation.

Summary of Results.—The 1 man improved only to the extent of being less violent and destructive. He has become a more conforming hospitalized, semi-convalescent patient. How much further the improvement will go it is impossible to say, because this is only at the end of one year. The gain of the 3 remaining patients still alive has been very considerable. Only 1 remains in a small private sanatorium in the country where she has horses and her own car and leads a relatively quiet country life, far removed from strict institutional life. One patient is able to live at home without a nurse and appears to her friends to have recovered entirely. The patient who is married seems to have made the best adjustment and perhaps we should call her recovered.

In our opinion at least one year should elapse after the operation before one attempts to judge the degree of improvement. With 3 of the patients there is a restored capacity to anticipate the future, to visualize it usually pleasurably, as in the matter, however, of relatively simple things, trips, cruises, rides, the acquisition of possessions, and so on. It is likely that auditory hallucinations continue in 3 cases, but there is less preoccupation and a rather remarkable ready distractibility, with evidence of insight. With 4 of the patients, and very striking with 2, there is a reclamation of former life material which permits some measure of reorientation with life and with family and friends.

In 3 introversion has been replaced to a striking degree of extraverted activity. There is a highly qualitative and almost wishfully selective distortion of time sense, and we would question whether that is psychogenic in part or whether it is all organically determined.

There are certain qualitative personality alterations which determine better social adaptability. For instance, with 2 patients a former disregard for others, selfishness and egocentricity have been replaced by generosity, thoughtfulness, kindness and consideration. Prepsychotic artistic capacities and an inclination toward intellectual interests, skill in games, both athletic and nonathletic, have been strikingly reclaimed.

From these studies and the studies described by others on this panel there seems to be a gradual shaping up of conclusions regarding frontal lobe functions. The

loss of the self critical faculty, impairment of temporal orientation and curious interference with temporal perspective are most conspicuous in our cases. The mental complacency, self satisfaction, the release of energy which is expended in more extroverted activity, the reduction in social propriety—all these may indicate a more primitive, more simple level of adjustment.

The tremendous gain in weight has been of particular interest because the distribution of adiposity resembles that of pituitary dystrophy; also the abnormal appetite, which at times becomes a desperate hunger, resembles the clinical picture of hyperinsulinism. The possibility of interference by the operation with certain hypophyseal connections, either directly or indirectly through the thalamus, must be considered. It is suggested that indications for the operation of frontal lobotomy be considered in relation to constellations of symptoms, that is, agitation, destructiveness, overactivity, restlessness and mental distress rather than in relation to any diagnostic label. A certain segment of the schizophrenic problem which proved to be impregnable to all other attempts at therapy might furnish good material for further study of this method.

THIRTY CASES OF FRONTAL LOBECTOMY

DR. THEODORE CHARLES ERICKSON, Montreal: I have been asked to discuss this problem in the light of my experiences with frontal lobectomy. In removals restricted to the prefrontal areas I have not observed any changes of course in the reflex activity, in the motor or the sensory system. I have, however, observed all the classic signs of frontal lobe disease, such as euphoria, tactlessness, inappropriate facetiousness and lack of self consciousness. Equally impressive, however, are those patients with complete frontal lobectomy who are indistinguishable from some apparently normal persons. The loss of one frontal lobe is compatible with a very superior intelligence as measured by the Stanford-Binet test, a relatively normal personality as measured by the Rorschach test, and even in 1 of our patients with satisfactory accomplishment in university and scientific school work.

What do these facts mean? They indicate that adequate tests of frontal lobe function are not yet in common clinical usage, although an impetus in this direction has been given by the work of Goldstein and others. On the other hand, the fact that some patients with absence of the frontal lobes cannot be distinguished from normal persons by the usual psychometric tests might almost make one assume that there are many so-called normal persons who do not employ their frontal lobes in everyday life. When one considers the difficulty encountered in demonstrating their function, one is not surprised that the frontal lobes have been called "biologic luxuries" and that an eminent evolutionist has spoken of them as parasitic growths.

A review of 30-odd cases of frontal lobectomy from the Montreal Neurological Institute has impressed me with the variety of intellectual accomplishments and with the diversity of personality changes which these patients may show. One scientific student, of very superior ability, from whom the left frontal, dominant lobe was completely removed back to the ventricle, four years after the operation had a perfect score on the Stanford-Binet with an intelligence quotient of 152, while other patients have had intelligence quotients somewhat below normal.

The personality picture as reflected in the Rorschach test has also shown a considerable variation notwithstanding the remarkable uniformity of personality limitation which characterizes the patient with extensive cerebral damage. There is the patient, for example, reported by Penfield and Hebb and by Harrower-Erickson who had a removal of both frontal lobes. Before operation he presented a behavior problem, irresponsible and childish stubborn. Fifteen months after operation the Rorschach test was essentially normal and his family considered that he was 100 per cent improved. He passed as a normal member of his community.

DR. FREEMAN: Was he able to work?

DR. ERICKSON: He was doing light work around the village.

DR. FREEMAN: I mean employed. Has any patient with bifrontal lobectomy been employed? I have looked up about 8 patients, and none of them, as far as I know, have been able to secure employment.

DR. ERICKSON: I don't think this man has either. None of ours have as far as I know specifically. Some patients with unilateral frontal lobe removal exhibit a perfectly normal personality, while others have given evidence of anxiety, tension and maladjustment. It is evident that a large removal from one frontal lobe does not prevent the development of anxiety states in the presence of distressful situations. I should like to mention certain psychotic states which are associated with focal epileptogenic lesions, particularly in the posterior portion of the frontal region. One of these cases was reported by Slight and Cone in 1937. Following a head injury there were focal attacks beginning in the left side of the mouth. The attacks later became generalized. Following status epilepticus the patient was admitted to the hospital in a confused state with alternate spells of laughing and crying. He was suspicious and he thought he was being persecuted. He talked in response to voices, one of which was his dead mother's, and he had some retrograde amnesia. The mental change was similar in form to that of cases commonly diagnosed as schizophrenia. A right osteoplastic craniotomy was performed and two superficial meningo-cerebral scars were exposed. One cerebral scar was anterior to the motor gyrus where the face movements are represented. There was also another scar just posterior to the rolandic gyri. Both were excised, and subsequent to operation the patient's mental state has been normal and he has been free from seizures for more than six years. He is married and is earning a living. Similar psychotic states secondary to epileptic discharge, arising from the presence of small tumors or scars in the posterior frontal region, have been observed in 6 other cases.

MODERATOR BUCY: Is it safe to assume that the psychotic symptoms disappeared because the scar was removed rather than because part of the frontal lobe was destroyed in removing the scar or because the convulsions were abolished?

DR. ERICKSON: No, I do not think it is, though these psychotic states are quite different from the confused, stupid state of automatism commonly seen after severe epileptic seizures. It is possible that these states are due to a general cerebral disorder as a result of the severe epileptic seizures.

RATIONAL BASIS OF TREATMENT

DR. GRINKER: On both sides of this question there is obviously a great deal of preconception and emotional bias. I think that those who have taken up this procedure have been interested in physical therapy in psychiatry, which has been based largely on a partially expressed and somewhat unexpressed feeling that the psychoses have a definite organic basis. On the other hand, those who are opposed to the method have again an emotional attitude toward a mutilating operation that destroys brain tissue. As long as we realize that on both sides there is some bias, perhaps listeners may conclude for themselves which is fact and which is bias.

In the first place, one tries to find out what type of case is selected for this operation. The statement is categorically made that those cases that are untreatable by conservative methods are selected, and the question that naturally enters my mind is What are those conservative methods? Surely, by conservative methods one does not mean metrazol or electric shock.

We are dealing with a large number of patients who have been chosen from state hospital populations. There have been some private cases, it is true, but when one thinks of what conservative treatment means, of what actual, thoroughgoing psychologic study and treatment mean, it is difficult to imagine that the patients who come from state hospital populations are getting the benefit of that type of treatment.

Again I want to call attention to the short duration of the patients' illnesses, because in looking over the data I have previously expressed my surprise that patients have been operated on after only a few months of mental illness. It is obvious that even the natural process of recovery has not been allowed to take its effect.

In looking over the diagnoses of the cases that have been selected, one finds that operations have been performed on patients with psychoneurosis, manic-depressive psychoses, schizophrenic personality, and so on. It is obvious then that this operation is devised for almost the whole field of psychiatry; yet one very good sign is Dr. Freeman's and Dr. Palmer's insistence that we discuss this matter not from the point of view of diagnosis but from the main presenting symptom, which is anxiety or apprehension, and, as you know, anxiety is not limited to any one neurotic or psychotic condition. As a matter of fact, it is present in all; therefore indication for operation becomes a question of the degree of anxiety.

Another statement that is made is that these people should not be young, and yet in the statistics of cases presented we see patients operated on at the age of 30, 33, 35, and I trust these are still young people. In other words, the anxiety states are not limited to those with so-called involutional melancholia.

Without drawing any conclusion about this difficulty of obtaining proper data, may I discuss first the type of defect after the operation. I think all the members of the panel are agreed that there is some defect, and that a great deal of difficulty has been found in testing the defect. The defect cannot be easily tested by the ordinary formal tests of intelligence. Halstead has shown clearly that persons with high Binet and normal Rorschach tests may show disturbances in categorical behavior that indicate a very severe disturbance even in those who appear well adjusted in their previous environment. There must be developed a technique of

measuring very carefully both the existing function and the defect in the individual before and after the operation.

The question of defect of function of the frontal lobes has been dealt with largely by generalizations. We have heard about defects of association or of synthesis. We have heard about the disturbances of category behavior at the level of abstraction, but we see that such things as initiative, ambition, productivity, creativeness are not measured and sometimes hardly mentioned in the post-operative defect. It seems that what is most likely to confuse the issue is a spurious kind of normality, a kind of normality that may permit the patient to return to situations of responsibility, with disastrous results.

There is another question which cannot be answered here, and that is the result of late scarring. These people have had trauma not only to brain tissue but to blood vessels, and the scarring that results, whether of glial or of connective tissue, will take time to produce its effect. There are now beginning to appear reports of the late development of convulsions following metrazol, insulin and electric shock therapy. It is possible that similar convulsions may appear later following frontal lobotomy.

To explain the improvements, if one may call the total picture improved, is tempting. It was tempting in the problem of insulin therapy when one thought that insulin therapy was the great panacea for schizophrenia, but now that the percentage of remissions is steadily declining to the spontaneous rate one is a little abashed at having attempted explanations. I do not believe that the effect of this operation is purely psychologic. The effect, if it were psychologic, could not last, since any effect on the psychotic individual would soon be overcome by the process of further living.

The second possibility is some general catastrophic reaction, some biologic reorganization which had nothing to do with the actual location of the operation. That has been amply disproved particularly by Dr. Freeman, who has pointed out that the effect is dependent on the quantity and the localization of the tissue cut.

The third possibility is the one that I think all have been agreed on, namely that there are some functions in which the prefrontal lobes are concerned that have to do with the development of anxiety.

I think that we are confronted in considering prefrontal lobotomy with a choice. The choice is the symptom of anxiety versus the postoperative defects and sequelae. Some of those sequelae are a lack of spontaneity, a loss of interest, of thoughtlessness, the loss of initiative and judgment, and some degree of euphoria.

I think all of us recognize that man's position in the animal kingdom is one of greatest domesticity. We have dealt with our fundamental instinctual trends with the greatest severity concomitant with what can be called civilization, which has been developed at a cost to every person of psychologic conflict. It is conflict between instinctual animal tendencies versus the social, economic and environmental prohibitory forces. This conflict manifests itself by anxiety which is universal. It is pathologic only in its degree, for we all have anxieties and all of us suffer. Sometimes the apparent suffering is not as great as indicated, and the evaluation of that suffering by an observer must be an extremely cautious affair. Sometimes the so-called suffering is actually pleasurable, as in the so-called maso-

chistic state. The possibility of this anxiety obtaining a certain pathologic threshold and becoming abnormal we all recognize. On the other hand, a certain quantity of anxiety is frequently the stimulus for a tremendous amount of productive and creative work, and when we think of some of the great men and women in our civilization we realize that their forceful drive to work was based on a great deal of anxiety.

It is obvious that if the anxiety and suffering, the things which one wants to relieve, are based on conflict, the rational basis of treatment is a psychologic therapy. This cannot always be done. It is sometimes very tedious and very costly, but if it were possible we would not hesitate to ask for more psychologic work in state hospitals rather than more operating rooms.

I think it is an extremely dangerous thing for man to assume that he is capable of judging quantity of anxiety and quantity of suffering, that he can tell exactly what dose of anxiety is normal and what is pathologic, and on that basis perform a mutilating brain operation. I think that the problem is much more dangerous with prefrontal lobotomy than with milder forms of therapy such as electric or metrazol shock, because after those forms of treatment the amount of recovery is considerable. But, once one cuts, there is no return. It is not possible to cut certain fiber pathways which function in the expression of certain individual conflicts. There is no such thing as microsurgery; it is an extremely macrosurgical procedure.

If we feel that the most rational therapy is a diminution of the severity of the conflict by psychologic methods, then by all means these must be tried first and thoroughly. I do not believe that the surgeon can assume the responsibility of being the operator at the behest of his neurologic and psychiatric friends and say "I did it because they told me to." He must assume the responsibility of insisting that before such operations are done all conservative means—and by "conservative means" I mean thorough going psychologic treatment—have been employed.

I think there is no question that this operation has a usefulness; but the delimitations of its usefulness have not been clarified. Older patients, perhaps people who have no chance whatever except to continue in state hospitals, are those on whom further experiments, since I think this is still an experiment, should be made. I perhaps may disappoint some, as I am not iconoclastic about this operation. I see its value. I think that perhaps something may come of it, but I do not think this is the time to disseminate it widely to the profession or to the public until we have learned much more of its limitations. I think its discussion should be limited to the specialists in the field.

DISCUSSION OF QUESTIONS

MODERATOR BUCY: Dr. Freeman, Dr. J. M. Nielsen of Los Angeles asks whether you have checked for such reflexes as Oppenheim's, Gordon's or Rossolimo's after this operation and, if so, what you have found, and also what about forced or reflex grasping.

DR. FREEMAN: These abnormal reflexes have been observed maybe a dozen times in the first forty-eight hours after operation. There have been 2 cases of hemiplegia, 1 with very definite reflex grasping, apparently caused by thrombosis or rupture of the anterior cerebral artery. This persisted to the end.

The most common neurologic signs after operation are masking of face, plateau speech and incontinence of the bladder.

MODERATOR BUCY: Dr. Palmer, Dr. A. E. Bennett of Omaha asks "A schizophrenic paranoid type, three years in the state hospital, had a partial remission after insulin shock for a short period of time and then relapsed. Might such a patient become a paroled patient following lobotomy?"

DR. PALMER: I think, provided the deterioration has been a fixed thing over a period of years and the response to energetic insulin therapy has been nil, it might be worth while to consider a prefrontal lobotomy. I should stress the importance of a reeducational phase following lobotomy. Certainly, the disruption of certain long-established habits by the cutting of association pathways calls for an effort to reeducate and to establish new patterns of behavior, since in the immediate postoperative phase the individual is very malleable and suggestible.

MODERATOR BUCY: Dr. Lyerly, Dr. John F. Fulton of New Haven, Conn., asks "Have there been any temporary or persistent changes in systolic blood pressure or any other circulatory changes after these operations?"

DR. LYERLY: One patient who had a severe involutional melancholia had a systolic blood pressure of around 200 before operation. With barbiturates, before operation, it could not be lowered below 160. After the operation it fell to 130 and has remained there since. There is no material change in blood pressure if the person had a normal blood pressure before operation.

DR. FREEMAN: If the blood pressure is normal before operation, it is likely to remain so during and after operation. We have followed 3 cases with hypertension of 190 to 240, and the blood pressure is now lower than it was four years ago.

MODERATOR BUCY: What would you say, Dr. Tarumianz, is the age limit? I presume he means the upper age limit.

DR. TARUMIANZ: The oldest patient operated on in our hospital was 66 years of age, and I believe that up to 70 should be considered.

MODERATOR BUCY: Dr. Tarumianz, Dr. Nichols asks "What happens to sexual behavior after frontal lobotomy?"

DR. TARUMIANZ: In our cases those who have been operated on have resumed normal sexual relationships.

MODERATOR BUCY: Dr. Freeman, Dr. Johnston asks "What insight do these patients who have been operated on show toward their former delusions, hallucinations, and so on?"

DR. FREEMAN: I think these patients do not recognize the nature of the delusions and the hallucinations. As I stated before, they lose the affective response to these, while the delusions continue of their own momentum for a while and then die out.

MODERATOR BUCY: Dr. Ralph B. Cloward of Honolulu asks "Has Dr. Freeman or Dr. Lyerly seen or studied gastrointestinal activity by fluoroscopy following the operation? Have stool examinations for blood been done to determine the possibility of erosions or ulcers?"

DR. FREEMAN: During the period of the operation the patient goes through the first side without any comment. Quite often with the first cut on the opposite side there is borborygmus and apparently reverse peristalsis with retching. Vomiting is continued at intervals for twenty-four or forty-eight hours, after which the symptoms subside. I think that among our patients there were some 30-odd who complained of indigestion before operation and not one of them had indigestion afterward.

DR. LYERLY: I have had some barium sulfate meals given patients before and after operation to test the motility of the stomach. In the few cases in which I have done this the motility of the stomach was essentially the same after operation as before. Some patients said that they had to be careful of what they ate before operation, and after operation they could eat anything and were hungry all the time. Constipation disappeared, and nausea and vomiting disappeared.

MODERATOR BUCY: Dr. Freeman, is it customary to use the instrument devised by Moniz or, if not, what type of instrument is now in use?

DR. FREEMAN: The Moniz instrument is ineffective and not particularly desirable because it leaves damaged tissue in place. At the present time we are using the Killian periosteal elevator to make a clean incision through the white matter of the frontal lobe.

MODERATOR BUCY: Is there any evidence that lobotomy might offer relief of postencephalitic behavior disturbances in children?

DR. FREEMAN: Rizzatti reported 5 or 7 cases of chronic encephalitic behavior disturbances, in 4 of which relief was obtained. I have had no experience.

MODERATOR BUCY: Have any of you had any experience with dextrose tolerance tests following lobotomy?

DR. FREEMAN: The test was unchanged in 1 case.

MODERATOR BUCY: Dr. Palmer, "Why isn't the effect of the operation as a shock the effective element?"

DR. PALMER: I would agree with Dr. Freeman and most of the others that the improvement is due entirely to the organic changes and the resulting alterations in function produced by the operation. The shock of unilateral lobotomy is almost as great as in the bilateral operation, and yet it has been repeatedly shown that unilateral lobotomy produces no change in behavior or in subjective feeling. I do not believe that the operation has any effect whatever as psychotherapy. All attempts at psychotherapy, including psychoanalytic procedures, reeducation, prolonged sanatorium care, suggestion, occupational therapy—every form of psychotherapy has been attempted over a period of many years in these patients without benefit. If they were to derive improvement from psychologic therapy associated with the shock of operation they would have obtained it from that which is inherent in metrazol therapy and in the solicitous care which goes along with insulin treatment.

DR. GRINKER: You are speaking now of your 5 schizophrenic patients?

DR. PALMER: Yes.

DR. GRINKER: That is quite a little different matter from the depressions that Dr. Freeman is talking about.

DR. PALMER: Dr. Grinker feels that many of the patients subjected to frontal lobotomy have not received

adequate or sufficiently deep psychotherapy. I should like to ask Dr. Grinker if he would tell us what success can be anticipated with psychotherapy in involutional melancholia and in the institutionalized schizophrenic patients.

DR. GRINKER: The question of percentage of success with psychotherapy is something that I cannot answer. It depends on the type of patient. It depends on the psychotherapist. It depends on a great many factors. What I have reference to is simply this: I feel that in many of these cases the psychotherapy has not been adequate. I recognize that there are cases in which no psychotherapy will help and one is forced to this or other radical procedures but always with a recognition of the extent of corollary defect. However, I am anxious about the future care of many of these patients, not especially those state hospital patients or institutionalized patients, but the general group of people with psychoses and psychoneuroses who will, if we are not very careful, be mutilated by this operation indiscriminately applied.

DR. TARUMIANZ: May I just say that I fully agree with Dr. Grinker. We must be careful with so radical a method. We should not consider any case for such an operation unless all necessary care and treatment have been given for at least two or more years.

DR. FREEMAN: I question, however, whether every patient before a prefrontal lobotomy should have the drastic treatment of metrazol, electric or insulin shock. I should like to ask Dr. Palmer in this connection whether he has also noticed that in the patients who recover after metrazol therapy and after electric shock therapy there is possibly the same temporal disorganization as following prefrontal lobotomy. I have seen patients who long after the shock therapy have said they couldn't remember time relationships, even though they had recovered substantially in other ways.

DR. TARUMIANZ: We have experienced that with our shock cases.

DR. PALMER: Yes, there is considerable disturbance of temporal orientation, there are even transient aphasia and transient amnesia following electric shock and following metrazol. These, however, have been of short duration, usually forty-eight hours, although in a man of 73 treated with electric shock the period of amnesia lasted for nearly three weeks. However, they have all experienced a restoration of the function of temporal orientation.

DR. FREEMAN: There is one other thing with regard to shock therapy. In a series of some 100 or 120 cases discharged from the hospital after shock therapy and followed over a period of six months to three years I have had 6 cases of suicide. After shock therapy a good many of these patients hate to come back for further shock treatment and some of them will take the quick way out rather than face that possibility. This fact, in addition to the other defects, the disasters, the fractured spines and spontaneous convulsions that occur following shock therapy, I think should make us a little cautious about saying "Well, we ought to try shock therapy first." Actually considerable damage can be done to the brain by shock therapy and we see that particularly following the prolonged comas produced with insulin.

GLANDULAR PHYSIOLOGY AND THERAPY

THE PARATHYROIDS—PHYSIOLOGY AND THERAPEUTICS

FULLER ALBRIGHT, M.D.

BOSTON

This special article is published under the auspices of the Council on Pharmacy and Chemistry. It is one of a series which will be published in book form as the second edition of "Glandular Physiology and Therapy." The opinions expressed in this article are those of the author and do not necessarily represent the views of the Council.—Ed.

NORMAL AND PATHOLOGIC PHYSIOLOGY OF PARATHYROID GLANDS

The parathyroid hormone has a marked influence on the metabolism of calcium and phosphorus. Its primary action, in my opinion, for reasons which cannot be gone into, is on phosphorus metabolism, and the changes in the metabolism of calcium are dependent on the preceding changes in the metabolism of phosphorus.¹

Calcium Metabolism.—The metabolism of calcium is considerably simpler than that of phosphorus. Over 99 per cent of the body's calcium is in the form of a calcium phosphate-calcium carbonate compound which is deposited in the organic matrix of bone and teeth. In addition, there are small amounts of calcium in body fluids. The calcium in the blood except for a negligible part is in two forms, calcium ions and calcium proteinate.² The parathyroid hormone apparently regulates the level of calcium ions. There is considerable circumstantial evidence that the stimulus for the parathyroid glands to produce more hormone is a serum calcium ion level below normal. Even when calcium is absent from the diet, a considerable amount is excreted in the urine, since the normal serum calcium value (10.5 mg. \pm 1 mg. per hundred cubic centimeters) is above the threshold (circa 7 mg.) for calcium excretion. Calcium is also excreted in the feces. There is evidence that fecal calcium represents not only calcium which has not been absorbed by the gastrointestinal tract but calcium which has been excreted into the gastrointestinal tract.³ The latter portion, however, is of small quantitative significance except in hyperthyroidism.³ Two other routes of calcium loss from the body are the lactating breast and the placenta. Since the amount of calcium which can be held in the body fluids is small and quite constant, it follows that if the calcium intake is greater than the calcium output the balance must for the most part be represented by the calcium deposited in bones or possibly in teeth. The converse must be true if the patient is in negative calcium balance.

Under normal conditions both calcium deposition and calcium absorption from bone are going on at all times. One process, to be sure, may be greater than the other, depending on the calcium balance as a whole. There is no such metaplasia of tissue in the teeth. It may be that there is a very slight interchange of calcium in the adult tooth, but, in my opinion, for all practical purposes this may be disregarded. When the tooth is being laid down there can be acalcification (i. e., absence of calcification) if the calcium metabolism in the body is faulty; once the tooth is formed, however, there is no decalcification. If tooth decay occurs during pregnancy, and it apparently does, the mechanism is not mobilization of calcium from the tooth to the blood stream, to the placenta, to the child.

1. Albright, Fuller, and Ellsworth, R.: Studies on the Physiology of the Parathyroid Glands: I. Calcium and Phosphorus Studies on a Case of Idiopathic Hypoparathyroidism, *J. Clin. Investigation* 7:183 (June) 1929.

2. McLean, F. C., and Hastings, A. B.: Clinical Estimation and Significance of Calcium-Ion Concentration in the Blood, *Am. J. M. Sc.* 189: 601 (May) 1935.

3. Aub, J. C.; Bauer, Walter, C., and Ropes, M.: Studies of Calcium and Phosphorus Metabolism: III. The Effects of the Thyroid Hormone and Thyroid Disease, *J. Clin. Investigation* 7: 97 (April) 1929.

Phosphorus Metabolism.—Phosphorus, likewise, is found in large amounts in bones and teeth (calcium to phosphorus ratio, approximately 2 to 1), and in smaller amounts in body fluids. In the serum one is here concerned chiefly with phosphorus in the form of inorganic phosphate. It is customary to speak of this as "serum phosphorus" rather than to use the more clumsy expression "serum phosphorus as phosphate." The normal level for adults is 3.5 mg. plus or minus 0.5 mg. It is higher in children. There are, in addition, in the body many organic phosphate compounds, such as phosphoprotein, phospholipids and various phosphate esters, which liberate phosphate ions on hydrolysis. Thus, a positive phosphorus balance does not necessarily mean that phosphates are entering the bones.

Relation of Calcium Metabolism to Phosphorus Metabolism in Disease of the Parathyroids.—If one stops substitution therapy with parathyroid extract in a parathyroidectomized patient, four cardinal metabolic changes occur. There is first an immediate decrease in the phosphorus excreted in the urine; second, the serum phosphorus level rises; almost simultaneously the serum calcium level falls; finally, with the fall in serum calcium there is diminished excretion of calcium in the urine.¹ If one administers parathyroid extract to a normal person these same four metabolic functions are altered in the opposite directions; i. e., one obtains hyperphosphaturia, hypophosphatemia, hypercalcemia and hypercalciuria. There are two schools of thought as to the mechanism by which these four cardinal metabolic effects are mediated. One school holds that the hormone acts on bone tissue (notably osteoclasts) and tends to dissolve or otherwise remove calcium phosphate deposits from the bone.⁴ Such a theory might explain the hypercalcemia, hypercalciuria, and hyperphosphaturia; it does not explain the hypophosphatemia unless one hypothesizes some secondary adjustment. The theory to which I adhere is based on the hypothesis that the hormone affects phosphates in the circulating body fluids in such a way that their excretion in the urine is increased. This would explain the immediate hyperphosphaturia on administration of parathyroid extract and the resulting hypophosphatemia. Furthermore, because of the lowered level of serum phosphorus, it is contended that the serum would be less saturated with respect to calcium phosphate and there would be an increased tendency for calcium phosphate to enter the serum from the gastrointestinal tract or from the bone. This would lead to hypercalcemia, and finally the hypercalcemia would lead to hypercalciuria. It will be impossible to discuss the pros and cons of these two opposite and still unproved theories in the present article.

HYPOPARATHYROIDISM

Causes.—A decrease in the number of, or absence of, the parathyroid glands is most commonly due to accidental removal of some or all of these organs during thyroidectomy. Very rarely, the condition occurs idiopathically. Just why all four glands should disappear idiopathically is of considerable academic interest. In an autopsy in such a case all four glands were found to be present and grossly to have a normal appearance. However, histologic sections showed that the epithelial cells had been entirely replaced by fat cells.⁵ An intermediate stage in which the epithelial elements were much diminished and replaced by fat tissue has been described in a patient suffering from anterior pituitary deficiency.⁶ In hypopituitarism, however, one does not find clinical evidence of hypoparathyroidism, and I do not believe that idiopathic hypoparathyroidism is due to lack of some hormone from the anterior lobe of the pituitary. There is considerable evidence that the parathyroid may be functionally deficient shortly after birth and that convulsions

in an infant may be a manifestation of hypoparathyroidism.⁷ Of academic interest is a case recently reported of hypoparathyroidism in a child born of a mother with hyperparathyroidism.⁸ This suggests that the infant's parathyroids became compensatorily hypoplastic in intrauterine life.

Pathologic Physiology.—The most important chemical findings are the low level of serum calcium and the high level of serum phosphorus. In a parathyroidism the serum calcium may be as low as 5.0 mg. and the serum phosphorus as high as 12.0 mg. per hundred cubic centimeters. There should be no calcium excreted in the urine except in the very mild forms, as the serum calcium should be below the threshold for excretion of calcium (see earlier comment on this). The phosphorus excreted in the urine is often within normal limits. One expects hypophosphaturia only when the patient is adjusting from one degree to a lesser degree of parathyroid function.

Symptoms.—The most striking clinical feature of hypoparathyroidism is the increase in neuromuscular excitability dependent on the hypocalcemia, producing the symptom complex known as tetany. This phase of the subject is so well covered in all the textbooks that it will be mentioned only in passing here. The features of tetany are: carpopedal spasm, positive Chvostek, Trousseau and Erb's signs, laryngeal spasm and epileptic seizures, especially if the condition has been present a long time or if it occurs in very young children. Cataracts are present in almost all cases of long-standing duration, although it may take a slit lamp examination to find them. In many cases, however, they are sufficiently severe that their removal is required. Calcification of brain tissue is not an infrequent finding.⁹ I have seen this in a case in which no symptoms referable to the central nervous system had been observed and in a case in which there had been epileptic seizures. When hypoparathyroidism develops before the teeth have entirely formed, one finds aplasia or hypoplasia of the teeth from that point in their development at which the hypoparathyroidism came in.¹⁰ Thus, if the disease develops in a child at about the twelfth year of age, the teeth will be entirely normal except for blunting of the root ends of the cuspids, premolars and second molars and hypoplasia of the crowns of the third molars. Those are the last parts of the teeth to form. Changes of the nails and hair have been described,¹¹ but they are not present in all cases and their significance remains obscure. The bones in hypoparathyroidism are definitely more dense than normal, which is of considerable academic but of no clinical importance.¹¹

Differential Diagnosis.—Other conditions which cause tetany may be confused with hypoparathyroidism. For all practical purposes one may consider that there are two causes of tetany: hypocalcemia and alkalosis. As far as I am aware, there is no evidence that the tetany caused by alkalosis is due to some secondary change in the availability of calcium ions.

The nonparathyroid causes for hypocalcemia are rickets or its adult form osteomalacia, steatorrhea, and

4. Thomson, D. L., and Collip, J. B.: The Parathyroid Glands. *Physiol. Rev.* 12: 309 (July) 1932. Jaffe, H. L.: Hyperparathyroidism (Recklinghausen's Disease of Bone). *Arch. Path.* 16: 63 (July) 1933.
5. Drake, T. G.; Albright, Fuller; Bauer, Walter, and Castleman, Benjamin: Chronic Idiopathic Hypoparathyroidism: Report of Six Cases with Autopsy Findings in One. *Ann. Int. Med.* 12: 1751 (May) 1939.
6. Castleman, Benjamin, and Hertz, Saul: Pituitary Fibrosis with Myxedema. *Arch. Path.* 27: 69 (Jan.) 1939.

7. Bakwin, Harry: Tetany in Newborn Infants: Relation to Physiologic Hypoparathyroidism. *J. Pediat.* 14: 1 (Jan.) 1939.

8. Friderichsen, C.: Therapy in a Suckling with Latent Osteitis Fibrosa in the Mother. *Lancet* 1: 85 (Jan. 14) 1939.

9. Eaton, L. M., and Haines, S. F.: Symmetrical Cerebral Calcification Associated with Parathyroid Insufficiency. *Proc. Staff Meet., Mayo Clin.* 14: 48 (Jan. 18) 1939.

10. Albright, Fuller, and Strock, M. S.: Association of Acalcification of Dentine with Hypoparathyroidism in Rats and the Cure of Same with Parathormone, with Some Correlated Observations in Man. *J. Clin. Investigation* 12: 974 (Sept.) 1933.

11. Howard, J. E.: Idiopathic Hypoparathyroidism. *Ann. Int. Med.* to be published.

renal insufficiency with phosphate retention. In rickets or osteomalacia the low value for serum calcium is characteristically coupled with a low, or in some instances normal, value for serum phosphorus. High values for serum phosphorus are most unusual. The serum phosphatase level, which is always normal or even low in hypoparathyroidism, is high in both rickets and osteomalacia. Steatorrhea, of which sprue is an example, probably leads to hypocalcemia, because vitamin D, being fat soluble, is dissolved in the unabsorbed fat; hence the condition results in hypovitaminosis D; the chemical findings in the blood are therefore those of osteomalacia. In addition, one may find evidence of a lack of other fat-soluble vitamins, notably vitamin K (hemorrhagic diathesis) and vitamin A (night blindness, keratosis pilaris).¹²

In renal insufficiency one finds phosphorus retention with a compensatory lowering of the serum calcium level. There is, however, in renal insufficiency as compared with hypoparathyroidism a lesser degree of hypocalcemia for the same degree of hyperphosphatemia. The probable reason why the serum can hold more calcium in proportion to the phosphorus in renal insufficiency is that there is almost invariably an associated acidosis. Furthermore, one seldom meets tetany in renal insufficiency with hypocalcemia because of the associated acidosis, which inhibits tetany. If one controls the acidosis, tetany may develop.

The commonest cause of tetany due to alkalosis is hyperventilation, usually due to some emotional disturbance. The diagnosis, though often missed, is very simple. The respirations are often quite deep but not so strikingly rapid; there may be a past history of similar attacks under emotional stress; the condition responds quickly to holding the breath or rebreathing in a paper bag; the urine, characteristically, is alkaline and contains normal amounts of calcium. The presence of calcium in the urine can be quickly verified by the aid of the Sulkowitch solution, which will be discussed under "Treatment." In hyperventilation the carbon dioxide-combining power of the serum may be only slightly reduced. The most significant change in the blood is a lowering of the carbon dioxide content of the arterial blood.¹³ A less common form of the tetany due to alkalosis is that following ingestion of large amounts of an alkali, in which one encounters an alkaline urine, calcium in the urine, high carbon dioxide-combining power of the serum and possibly a high value for serum total base. In alkalosis due to excessive loss of gastric contents, one again encounters an alkaline urine, calcium in the urine and an increased carbon dioxide-combining power of the serum, also a marked lowering of the serum chloride value.

Treatment.¹⁴—The tetany in the symptom complex of hypoparathyroidism is due to the low level of the calcium of the serum. The goal is to raise the level of calcium to normal without overdoing this and obtaining hypercalcemia. Thus, all that is needed is an agent to raise the serum calcium level readily to any desired degree and a simple method of gaging this level. Dihydrotachysterol fills the first need and the Sulkowitch test for calcium in the urine the second.

Dihydrotachysterol,¹⁵ like vitamin D, is a photochemical derivative of ergosterol. It was developed by Holtz in Berlin¹⁶ for the treatment of hypoparathyroidism. One can easily raise the calcium of the blood to any desired or even undesired level with this substance. Its mode of action is beyond the scope of this article.¹⁷

The Sulkowitch reagent¹⁸ is a solution containing oxalate radicals buffered at such a p_H that when an equal amount of the reagent is added to urine, the calcium will almost immediately come down as a fine white precipitate of calcium oxalate. If there is no precipitation there is no calcium, and the serum calcium level is probably from 5 to 7.5 mg. per hundred cubic centimeters. If there is a fine white cloud, there is a moderate amount of calcium, and the level of calcium in the serum is in the satisfactory range. If the precipitate looks like milk, the danger of hypercalcemia is present.

Once the diagnosis of parathyroid tetany has been made, dihydrotachysterol is administered until tests of the urine show moderate amounts of calcium. If large amounts of calcium appear in the urine, the dose is reduced and the danger of hypercalcemia is avoided. The patient makes his own tests and modifies the dose according to the results. I usually prescribe about 3 cc. of a dihydrotachysterol preparation a day until calcium appears in the urine; then the dose is dropped to a maintenance level—about 1 cc. three to five times a week.

This discussion has been slightly oversimplified. There are a few "ifs" and "buts" that must be added. Occasionally, a normal person who happens to be on a diet very low in calcium will show in a single specimen of urine practically no calcium. Almost any normal person shortly after drinking a large amount of milk will show an excess of calcium in the urine. Since one keeps patients with hypoparathyroidism on a diet high in calcium, one would expect them always to show hypercalciuria if their levels of serum calcium are normal. It thus turns out that if the dose is reduced when a large amount of calcium appears in the urine the blood calcium will be kept at a slightly subnormal level. This is probably all the better, since it further guards against hypercalcemia and since slight hypocalcemia is not deleterious.

A large number of measures other than the administration of dihydrotachysterol may be useful in the treatment of hypoparathyroidism.¹⁹ To be sure, treatment with this drug is so satisfactory that one may be disinclined to bother with the other measures. A few of the salient points will be mentioned. There should be a high intake of calcium and a low intake of phosphorus. Milk, though high in calcium, is contraindicated because it is likewise high in phosphorus. The dietary conditions are sufficiently met if the patient omits milk as a beverage from the diet and takes a teaspoon of calcium gluconate or of calcium lactate dissolved in water three times a day. Just as alkalosis causes tetany, so acidosis tends to alleviate

12. Albright, Fuller, and Stewart, J. D.: Hypovitaminosis of All Fat-Soluble Vitamins Due to Steatorrhea: Report of a Case, *New England J. Med.* **223**: 239 (Aug. 15) 1940.

13. Talbott, J. H.; Cobb, Stanley, Coombs, F. S.; Cohen, M. E., and Consolazio, W. V.: Acid-Base Balance of the Blood in a Patient with Hysterical Hyperventilation, *Arch. Neurol. & Psychiat.* **39**: 973 (May) 1938.

14. Albright, Fuller: Note on the Management of Hypoparathyroidism with Dihydrotachysterol, *J. A. M. A.* **112**: 2592 (June 24) 1939.

15. Dihydrotachysterol is marketed in the United States by the department of research of the Wyeth Chemical Company, Inc. It is marketed in a 10 cc. glass ampule containing 5 mg. of dihydrotachysterol. It is administered by mouth.

16. Holtz, F.: Die Behandlung der postoperativen Tetanie, *Arch. f. klin. Chir.* **177**: 32, 1933.

17. Albright, Fuller; Bloomberg, Esther; Drake, T. G., and Sulkowitch, H. W.: A Comparison of the Effects of A. T. 10 (Dihydrotachysterol) and Vitamin D on the Calcium and Phosphorus Metabolism in Hypoparathyroidism, *J. Clin. Investigation* **17**: 317 (May) 1938.

18. Two and five-tenths grams of oxalic acid, 2.5 Gm. of ammonium oxalate and 5 cc. of glacial acetic acid are dissolved in distilled water and made up to a volume of 150 cc.

19. Ellsworth, Read: Diagnosis and Treatment of Parathyroid Dysfunction, *Internat. Clin.* **3**: 27 (Sept.) 1933.

tetany. It is therefore helpful in some instances to make the patient slightly acidotic. Calcium chloride by mouth produces slight acidosis, since more chloride is absorbed than calcium. A favorite prescription in the past has been 10 cc. of a 30 per cent solution of calcium chloride diluted in water and taken three times daily after meals. Such a prescription produces slight acidosis and insures a high intake of calcium at the same time. It has been shown that thyroxin tends to raise the serum calcium level in hypoparathyroidism.²⁰ Since many patients with postoperative hypoparathyroidism are at the same time suffering from a slight thyroid lack, it is often wise to administer thyroid to the limit of tolerance. Although parathyroid extract has played a large part in the history of parathyroidology, it is not used routinely in the therapy of hypoparathyroidism. The drawbacks are that it is expensive, that it often causes a local reaction and that its effectiveness wears out, apparently because of the formation of an antibody.

In an acute emergency 10 cc. of calcium gluconate can be administered intravenously. It must be emphasized, however, that whereas the symptoms of tetany may be terrifying, the condition is seldom fatal. Laryngeal spasm is the one most dangerous manifestation.

If the blood calcium is kept normal in hypoparathyroidism, cataracts do not develop. Those, once formed, however, do not regress. The cause of the cataracts is apparently the hypocalcemia. Cataracts also occur in hypocalcemia without hypoparathyroidism (e. g., sprue).

PRIMARY HYPERPARATHYROIDISM

By "primary hyperparathyroidism" is meant a condition in which more parathyroid hormone is produced than is needed. By "secondary hyperparathyroidism" is meant a condition in which more parathyroid hormone is produced than is normal but this excess is needed for some compensatory purpose.

Causes.—Hyperparathyroidism may be due to a single adenoma of one of the four glands, to multiple adenomas or to hypertrophy of all the parathyroid tissue. In the first 50 cases of hyperparathyroidism proved to be such by operation or autopsy, at the Massachusetts General Hospital, the disease was due in 41 cases to a single adenoma, in 3 cases to two adenomas and in 6 cases to hypertrophy. By hypertrophy is meant a condition in which the amount of parathyroid tissue is about forty to one hundred times the normal. The histologic appearance of the tissue is entirely dissimilar from that seen in any other form of parathyroid disease.²¹ The individual cells have about five times the radius or about one hundred and twenty-five times the volume of a normal cell ($V = 4/3\pi r^3 = 4/3\pi \times 5 \times 5 \times 5 = 4/3\pi \times 125$). The histologic appearance is not in the least suggestive of hyperplasia, in which one finds cells of almost normal radius. The cause of hypertrophy of parathyroid tissue remains entirely obscure.

Pathologic Physiology and Diagnostic Considerations.—As in other conditions of overactivity of an endocrine gland, in hyperparathyroidism one can observe every degree of the disease. The slighter the

degree the less abnormal will be the chemical findings in the blood. It so happens that a very mild manifestation of the disease may lead to a fatal issue, hence it becomes important to recognize the mild forms. The serum calcium level is characteristically high (up to 18 mg. when the condition becomes severe) but may be within normal limits in the milder forms of the disease.²² It is important that the determination of serum protein be done in conjunction with that of serum calcium, since a normal level of serum calcium in the presence of a low level of serum protein is really abnormal. Of the two fractions of serum calcium, calcium ions and calcium as proteinate, it is the former which is primarily high in hyperparathyroidism; if the serum protein should be low, owing to some complicating condition, it might be that the level of serum calcium would be normal in spite of the fact that the calcium ions in the serum were increased.²² The serum phosphorus level in hyperparathyroidism is almost invariably low, 3.1 mg. or lower, unless renal damage is present. A normal person may have a low level of serum phosphorus on one determination, but it is characteristic of the patient with hyperparathyroidism that the level is consistently low. The calcium and phosphorus excreted in the urine are both increased. Again, however, there is an overlapping between normal and mildly hyperparathyroid states in the amount of calcium in the urine. If the hyperparathyroidism leads to bone disease, which it need not (see an earlier statement), the phosphatase level is increased, reaching 20 to 30 Bodansky units in severe forms.

There is a difference of opinion as to the cause of the bone disease in hyperparathyroidism. It is a fact that a patient may have severe hyperparathyroidism and still no clinical, roentgenologic or histologic evidence of bone disease.²² Those who believe that the parathyroid hormone acts directly on bone tissue would probably argue either that the aforementioned condition was of short duration or that some evidence of bone change would have been found had one examined the right bone tissue (e. g., trabeculae on the inside of the bone shaft rather than the cortex). This is not my interpretation. In my opinion, hyperparathyroidism brings about a change in the blood chemical balance which results in an increased excretion of calcium in the urine. Other things being equal, this increases the chances of the patient being in negative calcium balance. If the patient is in negative calcium balance, bone disease develops; if the patient happens to ingest as much calcium as is lost in the urine and feces, the calcium balance is not negative and bone disease does not develop. For all practical purposes, this usually comes down to whether the patient drinks milk. If he does, his calcium intake will be sufficient to keep him in positive calcium balance even if he has marked hyperparathyroidism.

Osteitis Fibrosa Cystica Generalisata.—Under normal conditions there is constant metaplasia of bone. There are trabecular surfaces where bone is being laid down and surfaces where bone is being absorbed. When the patient is in positive calcium balance, the former process outweighs the latter, and vice versa when the patient is in negative calcium balance. A decrease in bone tissue may result from increased absorption or from decreased formation of bone. The bone disease asso-

20. Aub, J. C.; Albright, Fuller, Bauer, Walter, and Rossmel, Elsie: Studies of Calcium and Phosphorus Metabolism. VI. In Hypoparathyroidism and Chronic Steatorrhea with Tetany, with Special Consideration of the Therapeutic Effect of Thyroid, *J. Clin. Investigation* 11: 211 (Jan.) 1932.

21. Albright, Fuller, Sulkowitch, H. W., and Bloomberg, Esther: Hyperparathyroidism Due to Idiopathic Hypertrophy (Hyperplasia) of Parathyroid Tissue. Follow Up Report of Six Cases, *Arch. Int. Med.* 62: 199 (Aug.) 1938.

22. Albright, Fuller, Sulkowitch, H. W., and Bloomberg, Esther: Further Experience in the Diagnosis of Hyperparathyroidism, Including a Discussion of Cases with a Minimal Degree of Hyperparathyroidism, *Am. J. M. Sc.* 193: 800 (June) 1937.

ciated with hyperparathyroidism belongs in the former category. The histologic evidence of bone absorption is an increase in the number of osteoclasts. Since the bones become much weakened, and since there is no fundamental disorder of bone repair processes, one finds evidence of bone repair (increase in osteoblasts) in conjunction with bone destruction. In other words, there is a marked increase in the metaplasia of bone. There results an increase in serum phosphatase, which in the absence of hepatic disease is an index of osteoblastic activity. The bone matrix which is laid down by the osteoblasts is calcified. The stroma of the bone marrow is also increased, causing fibrosis. Sometimes one sees solid tissue tumors composed of osteoblasts and osteoclasts. These are designated as benign giant cell tumors, or osteoclastomas. In addition, one finds cysts filled with fluid and lined with fibrous capsules. These are undoubtedly due to secondary degenerative changes. Likewise, one finds fractures. Most of the tumors and the cysts look like cysts on the roentgenograms and are usually so designated by roentgenologists.

Symptoms.—The symptoms of hyperparathyroidism can be distributed under three subheadings: (a) those due to bone disease, (b) those due to renal disease and (c) those due to hypercalcemia per se.

The symptoms which are produced by the bone disease can readily be inferred from what has already been said. Any bone tumor which on biopsy turns out to be a benign giant cell tumor (osteoclastoma) may be evidence of underlying hyperparathyroidism. Such a tumor has a special predilection for the jaw; when it occurs there, it is called an epulis. Not every epulis, however, is due to hyperparathyroidism. Almost any skeletal manifestation—a spontaneous fracture, a decrease in height due to crushing of vertebrae, a pain in the back, tenderness in the shins—may be the first symptom of the disease.

Because of the increased amounts of calcium and phosphate excreted in the urine, the patient with hyperparathyroidism is predisposed to the formation of calcium phosphate or calcium oxalate urinary calculi.²³ Indeed, the symptoms associated with nephrolithiasis are the commonest first manifestation of the disease. Calcium salts may be deposited also in the pyramids (nephrocalcinosis) and lead to renal insufficiency. Such deposits give a characteristic roentgenographic appearance which is quite pathognomonic of this disease. Polyuria and polydipsia are rather constant and may become so severe in some patients as to lead to the diagnosis of diabetes insipidus. The cases in which polydipsia is most marked are of course the ones in which renal calculi are least apt to develop.

Just as hypocalcemia causes increased neuromuscular excitability, so hypercalcemia leads to decreased excitability. In patients with very high serum calcium there are certain symptoms apparently due to the high serum calcium per se. These patients feel tired, lose weight and are constipated. These symptoms are too indefinite to help in the diagnosis, but after the condition is corrected the relief from them is quite striking.

Parathyroid Poisoning.—By "parathyroid poisoning" is meant a sort of hyperhyperparathyroidism. If one administers parathyroid extract in large quantities to a dog, death will occur in two to three days, and at autopsy there will be calcium deposits in the alveoli of

the lungs, the mucous membranes of the stomach and the kidneys.²⁴ The sequence of events apparently is as follows: an increasingly high level of serum calcium, inspissation of the blood, an acute failure of the kidneys to excrete phosphates, a rapid rise in serum phosphorus, a combination at the same time of high serum calcium and high serum phosphorus, a precipitation of calcium phosphates into the tissues and chemical death. Patients with hyperparathyroidism seldom have such a degree of the disease that parathyroid poisoning develops. The condition, however, does occur occasionally.²⁵ It is sometimes precipitated by faulty therapy. If the serum calcium is near the critical level, where a slight increase in it would precipitate parathyroid poisoning, it may so happen that a diet high in calcium would make the difference. In my opinion, the patient with severe hyperparathyroidism should be kept on a low calcium intake until there is no danger of parathyroid poisoning. One's first impulse after seeing the decalcified bones is to insure that the patient's intake of calcium shall be high; this may be fatal.

Differential Diagnosis.—In this section will be discussed only those bone diseases which might be mistaken for that due to hyperparathyroidism.

Osteoporosis belongs in that category of bone diseases in which there is too little bone because the formation of bone is decreased. Furthermore, the lack of bone formation is due not to a failure of calcium salts to be deposited in the organic matrix (compare osteomalacia) but to a failure of the osteoblasts to lay down an organic matrix. The disturbance, therefore, is not really one of calcium metabolism but one of tissue metabolism. The serum calcium and phosphorus values are normal, and the serum phosphatase is not elevated. There is one important exception to this statement. Children have a more unstable calcium equilibrium than adults and apparently develop work hypercalcemia due to atrophy of disuse. One finds this condition in children in whom a large part of the skeleton has been isolated from stresses and strains by infantile paralysis (personal communication, Dr. William J. Orr) or by a plaster cast (unpublished). The calcium excretion in the urine may be increased in the early stages of the disease, when it may give rise to renal stones. The condition when not due to atrophy of disuse or advanced age is almost confined to women past the menopause and has a predilection for the bones of the spine and the pelvis. The skull is very seldom involved.

Osteomalacia, like osteoporosis, belongs in that category of bone diseases in which there is too little formation of bone. Here the lack of formation is not due to hypoplasia of the osteoblasts but to a failure of calcium salts to be deposited in the organic matrix. In this country the condition is extremely rare and found only in association with steatorrhea. The serum calcium is normal or low; the serum phosphorus is almost always low; the serum phosphatase is high. There is no increase in the calcium excreted in the urine; if anything, it is considerably decreased.

Paget's disease differs from osteitis fibrosa generalisata in that it is a circumscribed disease. Where the bone is normal, it is absolutely normal; where it is abnormal, it has many things in common with osteitis

24. Heuper, Wilhelm: Metastatic Calcifications in the Organs of the Dog After Injections of Parathyroid Extract, *Arch. Path.* 3: 14 (Jan.) 1927.

25. Dawson, J. W., and Struthers, J. W.: Generalized Osteitis Fibrosa, with Parathyroid Tumor and Metastatic Calcification, Including a Critical Discussion of Pathological Process Underlying Osseous Dystrophies, *Edinburgh M. J.* 30: 421 (Oct.) 1923. Hanes, F. M.: Hyperparathyroidism Due to Parathyroid Adenoma with Death from Parathormone Intoxication, *Am. J. M. Sc.* 197: 85 (Jan.) 1939.

23. Albright, Fuller: Hyperparathyroidism: Its Diagnosis and Exclusion, *New England J. Med.* 209: 476 (Sept. 7) 1933.

fibrosa, notably the marked increase in metaplasia of the bone. The roentgenographic appearance of the individual bone lesions in Paget's disease is almost always pathognomonic. To be emphasized are the coarse trabeculation, the marked tendency of the bones to be expanded and the sharp demarcation between normal bone and abnormal bone. The serum calcium and phosphorus levels are normal; the serum phosphatase level is higher for a given degree of bone disease than in any other condition.

There is a syndrome characterized by osteitis fibrosa disseminata (polyostotic fibrous dysplasia²⁶), precocious puberty when it occurs in females, and areas of brown pigmentation.²⁷ Patients with this syndrome are frequently operated on in the belief that they have hyperparathyroidism. The diagnosis should offer no difficulty. The condition is not generalized but regional. This should immediately make one doubt the presence of an endocrine cause. The roentgenographic appearance of the bone is only superficially suggestive of that seen in hyperparathyroidism. There are areas of increased density as well as areas of decreased density. The serum calcium and phosphorus levels are normal; the serum phosphatase is high if there is a marked degree of the bone disease. The areas of brown pigmentation do not occur in all cases; the precocity mentioned occurs only in females.

Multiple myeloma can produce a clinical picture which may be most difficult to distinguish from that of hyperparathyroidism. The roentgenographic appearance of the bones can be quite similar, although in most instances of multiple myeloma the lesions are more sharply demarcated. For example, one expects punched-out areas in the skull rather than a diffusely "moth-eaten skull." The serum calcium can be high in myeloma; when it is, the calcium excreted in the urine is also high, and nephrolithiasis may be present. The high serum calcium is usually coupled with normal or high serum phosphorus. In some cases, however, the serum phosphorus is low, just as it is in hyperparathyroidism. The presence of large amounts of Bence Jones protein in the urine is strong evidence for myeloma; absence of this protein means little, as in only 15 of 30 cases of proved myeloma was it found.²⁸ Whether small amounts of this protein may be present with the bone disease of hyperparathyroidism is still questionable, as in those cases in which it has supposedly been found the most rigid criteria probably were not applied. Of course, the presence of plasma cells in the peripheral blood or a positive finding in a sternal biopsy or on sternal puncture are strong evidence for myeloma. The serum phosphatase is rarely if ever elevated in cases of multiple myeloma, an important differential point.²⁸

Metastatic malignant neoplasm offers less difficulty in the differential diagnosis. The roentgenographic appearance is quite distinctive. The serum calcium may be high, and there may be hypercalciuria and renal stone formation. The serum phosphorus level is usually normal, very occasionally elevated and occasionally lowered. The phosphatase level may be elevated. A primary

source should be looked for, and is apt to be in the breast, prostate, kidney (hypernephroma), bronchus or thyroid.

Other less common conditions which have been confused with hyperparathyroidism are: xanthomatosis, Gaucher's disease, lymphoma, benign metastasizing hemangioma, osteogenesis imperfecta, chronic radium poisoning and renal osteitis fibrosa generalisata (see under "Secondary Hyperparathyroidism").

Treatment.—It will be impossible to discuss treatment here in any but the most superficial manner. It is important to remember that whereas the symptoms due to bone changes may be the most striking feature of the case, the ultimate prognosis will depend on the extent of the renal damage. Most of the changes in the bones, exclusive of the cysts, are reversible; however, once the kidneys are sufficiently damaged as a result of nephrocalcinosis, recovery will not take place. There is even evidence that sometimes the renal condition is progressive after its cause has been removed.²⁹ Therefore, when a patient with severe hyperparathyroidism is first seen, fluids should be forced, and milk should be withdrawn from the diet to avoid further nephrocalcinosis, not to mention the danger of parathyroid poisoning (already emphasized). Although the bone lesions can be made to regress with a high calcium diet,³⁰ this is not to be recommended.

Since no satisfactory medical treatment for the condition has yet been devised, the main therapeutic indication is to remove surgically the etiologic factor or part of it. This requires an especially trained surgeon, not just a "good thyroid surgeon." If the condition is due to one or even two adenomas, and if the serum phosphatase level is normal (i. e., no bone disease), the indication usually is to remove the tumor or tumors. If, however, the pathologic change under otherwise similar conditions is hypertrophy of all parathyroid tissue, the procedure is to remove three of the parathyroid glands and all except 200 to 300 mg.³⁰ of the fourth.

If in a patient with marked bone disease and high serum phosphatase (20 Bodansky units or over) one removes all of the parathyroid tumor, there will be immediate cessation of bone destruction while bone formation continues at its terrific speed. This process will result in the calcium and phosphorus being sucked into the bones from the blood serum, with an increase in the hypophosphatemia and with production of marked hypocalcemia and severe tetany.²² The latter in the final analysis is not hypoparathyroid tetany, in which one has too little parathyroid tissue but normal bone. It is a much severer condition because of the "hungry bones."³¹ This form of tetany, when it occurs, will not respond to any of the usual measures of treatment and requires constant intravenous administration of a solution of calcium gluconate. At the Massachusetts General Hospital, it has been the rule not to remove the entire tumor in the patient with high serum phosphatase, unless there is some extenuating circumstance.

Another important consideration in deciding how much parathyroid tissue to leave behind is the degree

26. Lichtenstein, Louis: Polyostotic Fibrous Dysplasia, *Arch. Surg.* 36: 874 (May) 1938.

27. Albright, Fuller; Butler, A. M.; Hampton, A. O., and Smith, P. H.: Syndrome Characterized by Osteitis Fibrosa Disseminata, Areas of Pigmentation, and Endocrine Dysfunction, with Precocious Puberty in Females, *New England J. Med.* 216: 727 (April 29) 1937. Albright, Fuller; Scoville, W. B., and Sulkowitch, H. W.: Syndrome Characterized by Osteitis Fibrosa Disseminata, Areas of Brown Pigmentation, and a Gonadal Dysfunction, *Endocrinology* 22: 411 (April) 1938.

28. Jacobson, B.: Multiple Myeloma: Diagnosis and Treatment, to be published.

29. Albright, Fuller: Unpublished data.

30. Albright, Fuller; Baird, P. C.; Cope, Oliver, and Bloomberg, Esther: Studies on the Physiology of the Parathyroid Glands: IV. Renal Complications of Hyperparathyroidism, *Am. J. M. Sc.* 187: 49 (Jan.) 1934.

31. Churchill, E. D., and Cope, Oliver: The Surgical Treatment of Hypoparathyroidism Based on Thirty Cases Confirmed by Operation, *Ann. Surg.*, to be published.

of renal damage. In the presence of marked damage one leaves behind much more tissue than one otherwise would. The rationale is discussed under "Secondary Hyperparathyroidism."

The postoperative course should be an important subject of discussion in this section, but it will have to be omitted because of lack of space.

SECONDARY HYPERPARATHYROIDISM

There are at least two conditions in which more parathyroid hormone than is normal is needed, for compensatory reasons: rickets (or osteomalacia) and renal insufficiency.

With vitamin D insufficiency (rickets and osteomalacia) there is interference with the absorption of calcium from the gastrointestinal tract; this tends to cause a lowering of the serum calcium level, and this tendency, in my opinion, is met by hyperfunction of the parathyroid glands, the stimulus being the low level of serum calcium; the increased production of parathyroid hormone leads to a decrease in serum phosphorus; the net result is that the serum calcium level remains normal and the serum phosphorus level becomes low.³² In patients with rickets or osteomalacia in whom serum calcium is low and serum phosphorus normal the compensatory parathyroid hyperfunction has not taken place. In patients in whom serum calcium and phosphorus are both low the hypocalcemia has occurred in spite of the hyperfunction of the parathyroid glands.³²

Secondary Hyperparathyroidism in Renal Insufficiency.—In patients with renal insufficiency in whom there is retention of nonprotein nitrogen there is almost always retention of serum phosphorus. Such persons post mortem have hyperplasia of all four parathyroid glands.³³ It is my opinion that the sequence of events is as follows: (a) renal insufficiency, (b) phosphate retention, (c) tendency toward a low level of serum calcium and (d) hyperplasia of the parathyroid glands to meet this tendency. In rare instances in which the condition is of long duration it may be accompanied by osteitis fibrosa generalisata³⁴ and may be confused with primary hyperparathyroidism. It is probably the secondary hyperparathyroidism which prevents most patients with renal insufficiency from having severe tetany.

There is an important corollary to the foregoing discussion which has considerable bearing on the treatment of some patients with hyperparathyroidism. It is theoretically possible that the following sequence of events might take place: (a) parathyroid adenoma producing primary hyperparathyroidism, (b) renal damage with phosphate retention and (c) a state of affairs in which the amount of secondary hyperparathyroidism needed because of the renal damage equals or exceeds the amount of primary hyperparathyroidism present. When this third stage has been reached, it is obvious that it would be harmful to remove the parathyroid tumor. The most important practical point to be gleaned from the foregoing discussion is that one should remove less parathyroid tissue than otherwise in patients with hyperparathyroidism and renal damage.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.
HOWARD A. CARTER, Secretary.

"ALTEX" MATTRESS AND PILLOW ENCASINGS ACCEPTABLE

Manufacturer: Expert Bedding Company, 3355 North Halsted Street, Chicago.

The "Altex" Mattress and Pillow Encasings are intended for use by allergic patients sensitive to bedding dusts or the materials ordinarily used in the manufacture of mattresses and pillows.

"Altex" mattress and pillow encasings are made of a 60 by 112 count mercerized, white shirt type broadcloth, backed and bonded with a slow oxidizing, pigmented steam calendered rubber, impregnated with a deodorant. "Altex" cloth is backed in small quantities, in order that the patient may be supplied with constantly fresh material.

Mattress Closure and Interior Flap.—The mattress has an interior flap that acts on the weight principle (i. e., the weight of the mattress presses the flap down and holds it in place). After the flap is in place, the cloth-covered slide fastener is drawn shut and the exterior is lowered to cover the slide fastener. The instructions designate that "the casing opening should always be at the foot end of the bed to prevent any escaping material from getting to the patient."

Pillow Closure and Interior Flap Sheath.—The pillow interior flap sheath is used as a block for any heavy dirt or dusts; the weight principle is again utilized here, as in the mattress encasing.

Finishing and Sewing of Mattress Encasings.—Center seams are bias bound. All sewing is first done in the raw seams, which are then bias bound, a double stitch being made to insure tightly closed seams and to prevent possible leakage.

Finishing and Sewing of Pillow Encasing.—All seaming and binding is done on the inside of the encasing.

All sewing is done on a special sewing machine, producing a tight number 401 double lock stitch, carrying approximately nine stitches per inch; mercerized 0.3 natural thread is used.

Tests for Abrasion.—"Altex" cloth has a higher rating than two like products on the market.

Tests for Boiling.—Perspiration and soap boiling tests were made in the standard perspiration solution used by rubber chemists, and soap tests were made by boiling samples in 2 per cent soap solution for a period of twenty hours; the results were shown to be negative.

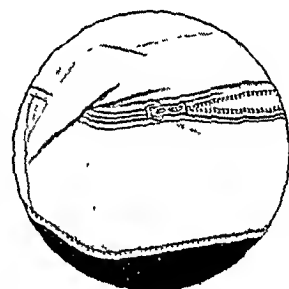
Water Test.—Small bags were sewn and filled with water. Tests showed that in the beginning there was a small drip; after two hours there was considerable swelling of the threads and seams, and thereafter the loss was by evaporation alone.

"Altex" encasings are fully guaranteed for one year from the date of shipment against deterioration, rips and such other factors as may be the result of faulty material and manufacture.

"Altex" encasings are sold on recommendation of the physician alone. None are sold through the avenues of retail stores.

The encasings were examined by the Council and were found to be well made and of good design. Each detail of the construction such as the sewing and the design of the flap inside and outside of the zipper fastening were good.

The Council voted to accept the "Altex" Mattress and Pillow Encasings for inclusion on its list of accepted devices.



"Altex" Mattress and Pillow Encasings.

32. Albright, Fuller, and Sulkowitch, H. W.: The Effect of Vitamin D on Calcium and Phosphorus Metabolism: Studies on Four Patients, *J. Clin. Investigation* 17: 305 (May) 1938.

33. Pappenheimer, A. M., and Wilens, S. L.: Enlargement of the Parathyroid Glands in Renal Disease, *Am. J. Path.* 11: 73 (Jan.) 1935.

34. Albright, Fuller; Drake, T. G., and Sulkowitch, H. W.: Renal Osteitis Fibrosa Cystica: Report of a Case with Discussion of Metabolic Aspects, *Bull. Johns Hopkins Hosp.* 60: 377 (June) 1937.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, AUGUST 16, 1941

OPERATION FOR RELIEF OF PAIN

Operations for the relief of pain are an important part of the rapidly developing field of neurologic surgery so intensively stimulated and developed by the late Harvey Cushing. Spiller¹ in 1905 suggested the possibility of relieving intolerable pain from the body by interrupting the pain pathways in the spinal cord. This procedure, called "chordotomy," was apparently first performed by Spiller and Martin² seven years later. Frazier³ in 1920 published a report of the first large series of cases in which pain was relieved by this means. The pain in all these cases was intractable; the cause in nearly all of them was inoperable cancer. In a report recently published in *THE JOURNAL*, Grant,⁴ an associate and a successor of Frazier, has reviewed the history of the operative relief of pain. Chordotomy, while effective in relieving pain from the torso and lower extremities, is not especially successful when pain is high in the arms or neck. The severance of individual sensory fibers is another method for the surgical relief of pain although applicable only in special locations, and its value is amply attested by the remarkable triumph often achieved in patients with tic douloureux and cardiac, pelvic and other pains.

A new operation for the relief of pain at the higher levels has been reported by Schwartz and O'Leary⁵ of Washington University School of Medicine. The approach is cerebellar and consists of section of the pain pathways in the medulla at the level of the inferior

olive. In the first case the relief from pain was immediate. Two days after operation, however, the patient died; necropsy showed extensive carcinomatosis of the lung. Important observations were made in this case on the central nervous system. By correlating anatomic and clinical data obtained from this patient it was possible to establish the location in the medulla of the pain fibers to the different parts of the body, and it was possible to demonstrate for the first time the topical localization of pain fibers within the spinothalamic tract of the brain stem. It also proved, for the first time, the feasibility of the procedure for the relief of pain located in the arms, chest and neck. In the second case the postoperative convalescence was uncomplicated, and complete alleviation of pain was obtained in the right chest, shoulder and axilla. Possibly wider application for this procedure than the relief of pain in inoperable cancer is suggested by a third instance cited by Schwartz and O'Leary; a patient with Raynaud's disease, operated on by J. C. White of Boston, enjoyed complete relief from pain.

These studies have successfully achieved two objectives. First, they provide another tool in the relentless battle against intolerable effects of pain located in parts of the body hitherto inaccessible to surgical relief and thus extend the usefulness of this important therapeutic procedure. Second, they contribute additional information concerning the exact localization of pain pathways in the central nervous system and thus bring closer to realization an accurate "wiring diagram" of the important nerve impulses which control human activity.

FRONTAL LOBOTOMY

Elsewhere in this issue of *THE JOURNAL* (page 517) is a condensed report of a panel discussion on frontal lobotomy held before the Section on Nervous and Mental Diseases at the annual session of the American Medical Association in Cleveland on June 5. In frontal lobotomy most of the fiber tracts are cut in the white matter of both frontal lobes, considerably anterior to the motor cortices. This procedure is said to be effective in removing the anxiety and in abolishing the responses (suicidal, homicidal and so on) to the delusions and hallucinations in certain depressive states, such as involutional melancholia, and in certain of the more agitated schizophrenic states. Psychotic persons subjected to this procedure also seem to lose much of their concern with self and with their own visceral and mental activities; they develop a more normal, healthy attitude toward their environment.

In spite of these "improvements" in the mental condition of some patients this operation should not be considered capable of transforming a psychotic personality into a normal one. Even in our present state of ignorance concerning the frontal lobes there is ample evidence of the serious defects produced by their removal in nonpsychotic persons (Penfield and

1. Spiller, W. G. The Occasional Clinical Resemblance Between Cases of the Vertebrae and Lumbosacral Syringomyelia, and the Location Within the Spinal Cord of the Fibers for the Sensations of Pain, and Temperature, Univ. Pennsylvania M. Bull. 18:147, 1905-1906, The Location Within the Spinal Cord of the Fibers for Temperature and Pain Sensations, J. Nerv. & Ment. Dis. 32:318, 1905.

2. Spiller, W. G., and Martin, Edward The Treatment of Persistent Pain of Organic Origin in the Lower Parts of the Body by Division of the Anterolateral Column of the Spinal Cord, J. A. M. A. 58:1489 (May 18) 1912.

3. Frazier, C. H.: Section of the Anterolateral Columns of the Spinal Cord for the Relief of Pain, Arch. Neurol. & Psychiat. 4:137 (Aug.) 1920.

4. Grant, F. C. Surgical Methods for Relief of Pain, J. A. M. A. 116:567 (Feb. 15) 1941.

5. Schwartz, H. G., and O'Leary, J. L.: Section of the Spinothalamic Tract in the Medulla with Observations on the Pathway for Pain, Surgery 9:183 (Feb.) 1941.

Evans,¹ Brickner,² Goldstein,³ Halstead⁴). It is inconceivable that any procedure which effectively destroys the function of this portion of the brain could possibly restore the person concerned to a wholly normal state. In a few instances frontal lobotomy has resulted in convulsions, which did not appear until months or even years after the operation. As yet the nature and magnitude of the defects attendant on frontal lobectomy or frontal lobotomy are only superficially understood. Their nature must be thoroughly determined and their degree accurately assessed if we are to balance intelligently the beneficial results of this procedure against the alterations in personality which the procedure itself may produce. Only thus can frontal lobotomy be truly evaluated and assigned a proper place in the therapeutic armamentarium of the psychiatrist.

An emotional attitude of violent unreasoning opposition to this form of treatment would be inexcusable. True it is a "mutilating" operation and it does result in certain defects in personality and behavior. However, much surgery is "mutilating" in the sense that some ordinarily normal tissue is removed in order to achieve a beneficial result. This is true, for instance, of appendectomy, gastrectomy, sympathectomy and the removal of cerebral cortical scars for the relief of localized convulsions. Much abdominal surgery also results in "defects." Moreover, only severely mentally ill patients who are permanently incapacitated are subjected to this form of treatment. Frontal lobotomy has not been advocated for "normal" persons.

In this panel discussion, abstracted in this issue of *THE JOURNAL*, sufficient information is presented to warrant further experience with this procedure. Until adequate evidence is available, this operation remains of necessity an experimental procedure. Its use may well be restricted to persons who have received the benefits, if any, of all less drastic forms of therapy that are recognized by modern psychiatry; to persons in whom there is no doubt, because of the long duration and the nature of the illness, that their condition is both serious and otherwise permanent. However, it does not seem reasonable to demand that all patients must be previously submitted to other drastic, often "mutilating," procedures such as an insulin, metrazol and electric shock, which like frontal lobotomy are also still in the experimental stage and in the process of assessment. The problems concerned in frontal lobotomy are susceptible of solution only by those specially trained in the fields of psychiatry, psychology and neu-

rology. Certainly such an operation cannot be widely applied to all forms of the neuroses and psychoses. Neither should it be utilized except by specially trained investigators situated in centers equipped to study such methods under adequate control. In the present experimental stage there is no excuse for dissemination of discussions or of any statements laudatory of this procedure to the general public. No doctor can yet assert that this is or is not a truly worthwhile procedure. The ultimate decision must await the production of more scientific evidence.

Current Comment

CHEMICAL NATURE OF BLOOD AGGLUTINOGEN

The isolation and identification of the human blood group specific B-agglutinin has just been reported by Witebsky,¹ a refugee physician from the Institute for Experimental Cancer Research, Heidelberg, Germany, at present a member of the research staff of the Buffalo General Hospital. Determination of the chemical nature of this hereditary hapten is of both theoretical and clinical interest. Following the development of modern methods of determining incompatibilities to blood transfusion in patients, blood group specific A-substance was detected in the urine, saliva and gastric contents of subjects belonging to the type A blood group. The first successful isolation of this hereditary agglutinin, however, was made from horse saliva. From 1 liter of this saliva (obtained by therapeutic salivation) Landsteiner² isolated 5 mg. of a mucin-free, protein-free, coagulable substance which would specifically inhibit type A rabbit hemolysin and type A human isohemagglutinin. Chemical analyses showed that this specific erythrocytic hapten is a carbohydrate belonging to the same general category as the type-specific bacterial polysaccharides. Landsteiner's chemical technic was afterward improved by Goebel,³ who was able to isolate from 1 to 3 per cent of type A erythrocytic polysaccharide from commercial peptone. This result was of main clinical interest at the time, since it suggested a fertile source of technical error in the immunochemical classification of pneumococci and other capsulated bacteria. Numerous unsuccessful attempts were made at about the same time to isolate B-substances from human blood. It was not till the discovery that type B hapten exists in particularly high concentration in the gastric juice of subjects belonging to blood group B that these attempts were successful. From 110 cc. of pooled blood group B gastric juice Witebsky and his co-workers were able to isolate 13.5 mg. of type B erythrocytic polysaccharide. In dilutions as high as 1:2,000,000 the Witebsky hapten completely inhibits isoagglutination of human B-group cells by A-group human serum. Parallel titrations suggest that the concentration of type B erythrocytic polysaccharide

1. Penfield, Wilder, and Evans, Joseph: *The Frontal Lobe in Man: A Clinical Study of Maximum Removals*, Brain 58:115 (March) 1935.

2. Brickner, R. M.: *The Intellectual Functions of the Frontal Lobes*, New York, Macmillan Company, 1936.

3. Goldstein, Kurt: *The Significance of the Frontal Lobes for Mental Performances*, J. Neurol. & Psychopath. 17: 27 (July) 1936.

4. Halstead, W. C.: *Behavioral Effects of Lesions of the Frontal Lobe in Man*, Arch. Neurol. & Psychiat. 42:780 (Oct.) 1939; *Preliminary Analysis of Grouping Behavior in Patients with Cerebral Injury by the Method of Equivalent and Nonequivalent Stimuli*, Am. J. Psychiat. 96:1265 (May) 1940.

1. Witebsky, Ernest, and KlenDshoj, Niels C.: *J. Exper. Med.* 72: 663 (Dec.) 1940.

2. Landsteiner, Karl: *J. Exper. Med.* 63:185 (Feb.) 1936.

3. Goebel, Walter F.: *J. Exper. Med.* 68:221 (Aug.) 1938.

is in the neighborhood of 1:1,000 in group B gastric juice. The main interest in Witebsky's research lies in its promising clinical applications.⁴ Contrary to earlier clinical beliefs, it is now increasingly evident that transfusion of O blood into A and B patients often causes serious toxic reactions. This toxicity is presumably due to anti-A or anti-B isoagglutinins and isohemolysins invariably present in O bloods. The titer of these isoantibodies may vary greatly, but they are often present in sufficiently high concentration to cause demonstrable test tube reactions with type A, B or AB recipient erythrocytes. In recognition of this danger, a law has been recently enacted in New York State in which "careful titration of the anti-A and anti-B properties of O blood is required before O blood may be given to individuals belonging to other groups." Witebsky finds that O blood toxicity for type A recipients can be completely inhibited by neutralizing the anti-A isoantibodies with A erythrocytic carbohydrate. In ten human blood transfusions thus far made with A neutralized O bloods toxic reactions that could be attributed to anti-A isoagglutinin have not been noted. Calculated from his reported data, 2 mg. of A carbohydrate is sufficient to detoxicate 500 cc. of O blood of high anti-A titer. In the opinion of Witebsky and his colleagues, the addition of A substance to O blood is in all cases clinically harmless. Whether or not his newly isolated B erythrocytic carbohydrate is equally effective with type B recipients has not yet been determined.

DENTAL CARIES IN RURAL CHILDREN

The connection between dental caries in children and the reduced cutaneous production of vitamin D from solar radiation due to climatic factors has been studied by East and Kaiser.¹ They took into consideration the mean number of hours of sunshine annually, the latitude and the mean winter temperature. Next they selected the caries rates for white children residing in three hundred and fifty-eight rural or semirural counties of twenty-four states of the United States as determined by data collected under the direction of the American Dental Association and the United States Public Health Service.² The survey comprised 581,708 children about equally divided according to sex and classified in age groups of 6 to 8, 9 to 11 and 12 to 14 years. Rural children were selected because of the greater uniformity in ethnology, food, housing and living conditions and in the amount of dust and smoke in the air. The study was restricted to white children to exclude, as far as possible, the variable which skin pigmentation might introduce. Only caries in permanent teeth was considered. The data for the mean number of annual hours of sunshine in the various counties and for the mean winter temperature were taken from records of the United States Weather

Bureau. Of the three hundred and fifty-eight counties one hundred and ninety had more and one hundred and sixty-eight had fewer than two thousand six hundred hours of sunshine annually. Groups living in counties where most sunshine prevailed had in every instance the lowest rates for caries. One hundred and thirty-four counties had a mean winter temperature higher and two hundred and twenty-four a mean temperature lower than 30 F. Groups living in zones in which the mean winter temperature was below 30 F. had higher rates for caries than those who lived where the mean temperature was higher. One hundred and sixty-nine counties were north and one hundred and eighty-nine were south of latitude 40 north. In every instance the children living in the northern zone had a higher mean rate for caries. To determine the degree of relation between the caries rates and the three climatic factors of sunshine, latitude and winter temperature, the correlation coefficients of all possible combinations were computed by means of the partial regression equation,³ an intricate statistical formula, and the results are tabulated by the authors. The lowest values in their sunshine series indicated that each additional hundred hours of sunshine was associated with a decrease of 3.92 ± 0.8 and 4.7 ± 1 per cent from the mean rates of caries in the permanent teeth of boys and girls, respectively, in the 9 to 11 year groups. The highest values were in the 6 to 8 year groups, which showed respective decreases of 7.4 ± 1 and 6.3 ± 1.6 . The values for the 12 to 14 year groups were intermediate. In their latitude series each increase of 1 degree of latitude was accompanied with a percentage increase of 2.7 ± 1.3 in the caries rates for boys of 6 to 8 years. In girls of the same age the increase of the mean rate was 1.1 ± 1.2 per cent. The other age groups showed important and statistically significant percentage increases. The lowest value for the groups of 9 to 11 and 12 to 14 years was 4.1 ± 1.1 per cent for each degree of latitude. In the evaluation of the relation of winter temperature to caries rates it was found, after the overlapping influences of sunshine and latitude had been eliminated, that winter temperature exerted little effect on the caries rates where boys were concerned and on those for girls in the age groups from 9 to 11. This study, accordingly, confirms previous evidence that a significant relation seems to exist between the incidence of dental caries and the amount of sunshine and the latitude. Winter temperature was an important climatic factor only for girls in the age groups of 6 to 8 and 12 to 14 years. This difference in incidence, the authors speculate, may be due to the fact that the youngest girls are kept indoors in cold weather while boys of the same age are not. Similarly, rural girls between 12 and 14 years may have indoor duties while boys of the same age find their recreation and tasks outdoors. The results of this study of environmental factors in relation to dental caries, they say, are in accord with those obtained in controlled vitamin D therapy experiments and in artificial ultraviolet irradiation.

4. Witebsky, Ernest; KlenDshoj, N. C., and Swanson, P. R.: *J. Infect. Dis.* 67:188 (Nov.-Dec.) 1940.

1. East, Bion R., and Kaiser, Hilda: *Relation of Dental Caries in Rural Children to Sex, Age and Environment*, *Am. J. Dis. Child.* 60: 1289 (Dec.) 1940.

2. Messner, C. T.; Gafafer, W. M.; Cady, F. C., and Dean, H. T.: *Dental Survey of School Children, Ages 6 to 14 Years, Made in 1933-1934 in Twenty-Six States*, *Pub. Health Bull.* 226, U. S. P. H. S., 1936.

3. Fisher, R. A.: *Statistical Methods for Research Workers*, London, Oliver & Boyd, 1936.

MEDICAL PREPAREDNESS

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.

ARMY IN BEST PHYSICAL SHAPE SINCE START OF EMERGENCY

According to health records from all nine corps areas, the Army of the United States is in the best physical shape it has been in since the emergency began, the War Department announced, July 31. No epidemic diseases are prevalent. During the second week in July the admission rate to all Army hospitals for all causes was the lowest of the year. The rate went up slightly during the third week, but blistered heels and similar minor ailments made the difference.

For the last two months respiratory diseases have been no higher than the ten year rate for the preemergency army. This ten year rate is considered by Army medical men to be excellent.

At present the rate of men off duty because of diseases is 12 per thousand. In the Army a man is either on duty or in

Cases of Poliomyelitis Reported in Army Since Jan. 1, 1941

Station	Date Reported	No. of Cases
Camp Beauregard, La.....	January 11	1
Camp Beauregard, La.....	January 18	1
Camp Haan, Calif.....	April 22	1
Camp Haan, Calif.....	April 24	1
Camp Livingston, La.....	January 18	1
Camp Stewart, Ga.....	April 26	1
Fort F. E. Warren, Wyo.....	March 1	2
Fort Brown, Texas.....	May 23	1
Fort Benning, Ga.....	July 10	1
Fort Custer, Mich.....	July 16	1
Atlanta, Ga.....	July 24	1
Total, first seven months, 1941.....		12

a hospital, so the same causes that would force a civilian to take it easy for a half day send a soldier to the hospital for attention.

The Surgeon General's Office is notified by telegraph of each case of such serious epidemic diseases. In the last seven months only 12 cases were reported from all corps areas.

AIR CONDITIONING FOR ARMY BARRACKS

The War Department announced on July 31 authorization for the installation by the Engineer Corps of air conditioning equipment, in the form of humidifying coolers, at army air corps installations in high temperature zones, at a total cost of about \$500,000. Investigations conducted by Engineer Corps officers in the field indicated a temperature drop from 10 to 20 degrees F. when the coolers were used. They are of simple construction and easily installed. Consisting of a metal cabinet filled with fine cut porous substance such as excelsior, the cabinet is attached outside a window. The filler material is thoroughly wet down with water, and a fan on the room side of the cabinet draws wet or humid air through it into the room. Evaporation of this moisture lowers the room temperature. Theaters, chapels, barracks, hospitals, bachelor officers' quarters, cadet barracks and school buildings on the selected posts will be equipped with coolers. Coolers will be installed at Las Vegas Airfield, Nevada, Phoenix-Higley Airfield, Luke Field and Tucson Airfield, Arizona, and Muroc Bombing Range, Victorville Airfield, Bakersfield Airfield, Fresno Airfield, Taft Airfield, Merced Airfield and Lemoore Airfield, all in California. The work will proceed immediately.

PHYSICAL EXAMINATIONS FOR OFFICERS ELIMINATED

During the present emergency the annual physical examination of officers, warrant officers and nurses of the Regular Army, and the usual physical examination in the event of temporary promotion for all officers in the Army of the United States, except Air Corps officers, have been eliminated, the War Department announced on July 31.

Previously, every officer, warrant officer and nurse of the Regular Army was required to undergo a physical examination each year, and on promotion an officer again received a physical examination. The new policy dispenses with these examinations except in the case of Air Corps officers, who will continue to be examined twice each year. Officers of the Regular Army who receive permanent promotion must still receive physical examinations.

The physical examinations were eliminated because of the excellent physical condition of all officers at the start of the emergency. Regular Army officers have had their annual physical examination and were found unusually fit. Officers in other components of the Army received rigid physical examinations on induction into federal service.

DEFENSE ACTIVITIES OF NAVY'S MEDICAL SERVICE

The Bureau of Medicine and Surgery of the U. S. Navy has established a section of industrial health to help increase production in the Navy's industrial shore establishments by keeping preventable accidents and industrial disease at a minimum. Sixteen medical officers recently completed courses of postgraduate instruction at the schools of public health of Columbia University in New York and Harvard University in Boston. These officers were to be assigned to the shore establishments. The Naval Medical School is also training and equipping mobile epidemiologic and sanitary units, which may be sent to meet health emergencies wherever the Navy's forces are distributed. The central laboratory in the Naval Medical School will serve as a base for these units to carry out investigations too complicated to be done in the field. It is pointed out that the purpose of this plan is twofold: first, the eradication and prevention of spread of infectious diseases and, second, the accumulation of knowledge which should be of value in the future.

PUBLIC HEALTH SERVICE TO FIGHT VENEREAL DISEASE

A nationwide venereal disease control program in areas of military and defense industry concentration was announced on July 27 by WPA Commissioner Howard O. Hunter. The program has been approved by the President as a unit of the WPA national defense research and records assistance project, for which an allocation of \$5,015,864 was made several months ago. The United States Public Health Service will act as the official sponsor.

Surg. Gen. Thomas Parran said that the purpose of the program is to provide assistance to state and local health authorities in (1) bringing under immediate treatment selectees who have been rejected or deferred by their local Selective Service boards because of syphilis or gonorrhea and making these men available for military service on completion of treatment; (2) tracing

the sources of infection and rendering potential spreaders of venereal disease noninfectious through prompt and adequate treatment; (3) placing treatment facilities for gonorrhea on a par with those for syphilis and providing medical and public information on new chemotherapeutic methods for curing gonorrhea, and (4) establishing emergency venereal disease control programs in "boom" towns where regular public health facilities are insufficient to cope with the problem.

Dr. Parran cited findings of Selective Service medical examination which showed that 6 per cent of the draftees examined were infected with syphilis or gonorrhea.

Mr. Hunter pointed out that WPA workers have engaged in venereal disease control work in many parts of the country during the last six years. A check made several months ago revealed that about four thousand project employees in thirty-three states and the District of Columbia were assisting in the operation of four hundred and thirty-one public clinics for the treatment of venereal diseases. This assistance takes many forms. Among the four thousand WPA employees there were laboratory technicians, physicians, nurses, researchers, investigators, clerical workers and miscellaneous help. "One of the most notable instances," Mr. Hunter continued, "is illustrated by the development of venereal disease control work in Chicago. Largely as the result of the assistance rendered by the Work Projects Administration, the Chicago Board of Health has been able to expand the capacity of its various venereal disease clinics from a daily average of five hundred patients in 1937 to about eighteen hundred today. This, according to preliminary evidence, has resulted in an actual decline in the prevalence of syphilis in Chicago." WPA has also participated in venereal disease control programs in New York, Boston and other cities.

First proposals for projects under the new nationwide program have already been received. One came from Dr. Roland R. Cross, Illinois state director of public health, and another from Dr. Herman N. Bundesen, president of the Chicago Board of Health.

MEDICAL RESEARCH COMMITTEE AND THE DEFENSE PROGRAM

President Roosevelt has designated four members of a medical research committee in the newly established Office of Scientific Research and Development to direct medical research in relation to the defense program, it was announced on July 17. They are Drs. Alphonse R. Dochez, professor of medicine, Columbia University College of Physicians and Surgeons, New York; Alfred N. Richards, professor of pharmacology and vice president for medical affairs of the University of Pennsylvania, Philadelphia; Lewis H. Weed, professor of anatomy, Johns Hopkins University School of Medicine, Baltimore, and chairman of the division of medical sciences of the National Research Council, and Albert Baird Hastings, Ph.D., Hamilton Kuhn professor of biologic chemistry, Harvard Medical School, Boston. The Office of Scientific Research and Development was established by an executive order of the President issued on June 30. Vannevar Bush, Ph.D., president of the Carnegie Institution of Washington, who has been chairman of the National Defense Research Committee, is now director of the new research agency.

U. S. ARMY TYPHOID VACCINE

The Army in the last fiscal year produced more typhoid vaccine at the Army Medical School, Washington, D. C., than in any other peacetime year. Not only are soldiers of the Army being inoculated against typhoid, but the vaccine is also being supplied to the United States Public Health Service, the Navy, the Civilian Conservation Corps, the Department of Justice, the Indian Service, the Veterans' Administration, the government of Puerto Rico and many others. As part of the good neighbor policy, the stock culture for vaccine has been furnished on request to other nations in the western hemisphere.

In the last year the output was increased more than eight times. A total of 33,500,000 cc., the equivalent of 8,500 gallons of typhoid vaccine, were made. This represents a saving to the government of \$1,540,000 over the cost of purchase. Typhoid

vaccine is being made by the Army with a culture from the body of a typhoid fever carrier in the Panama Canal Zone, who is kept under constant supervision by Army doctors. The original typhoid culture came from an English soldier who died in the Boer war, but recent investigation showed this strain had lost its potency. The cultures are preserved in glass tubes by a special process of freezing at a temperature of 108 degrees below zero and sealing in a partial vacuum. These tubes of cultures can be preserved for long periods.

The Army laboratory in which the vaccine is made is the largest of its kind in the world. Planting, harvesting and bottling of the vaccine are done in air conditioned cubicles which are sterilized by live steam prior to use. During all operations, filtered and sterilized air is pumped into the chambers and maintained at a pressure above that of the atmosphere in order to prevent the entrance of untreated air. The vaccine is standardized by the use of an "electric eye," so that all batches will be of the same strength. From a mixing chamber it passes to an automatic bottling device to be sealed in the final state for issue. Control tests are made on every run of vaccine at every stage of production. These tests extend over a period of four weeks, until which time no batch of vaccine is given a clearance for issue.

MEDICAL R. O. T. C. GRADUATES

More than four hundred R. O. T. C. students received certificates after completing the six weeks course July 23 at the Medical Field Service School, Carlisle Barracks, Pa. Seventeen medical schools east of the Mississippi were represented in this group, which was the first R. O. T. C. class to be graduated at Carlisle Barracks since the President declared the present military emergency. This brings the total of graduates, however, of the several camps and classes conducted at the Medical Field Service School to 18,546. Brig. Gen. Addison D. Davis, commandant of the school, presented the certificates. Col. Philip W. Huntington, George Washington University, Washington, D. C., was in immediate charge of the camp of the R. O. T. C. students, and his executive officer was Col. Asa M. Lehman, professor of military science and tactics at the Jefferson Medical College, Philadelphia. The other instructors at the camp besides the entire faculty of the Medical Field Service School comprises the professors of military science and tactics who have accompanied the R. O. T. C. students from their medical schools and include Lieut. Col. James H. Ashcraft, Boston University, Lieut. Col. Rowland D. Wolfe, Ohio State University, Major Harry G. Wyer, University of Vermont, Capt. Edward K. Reid, Syracuse University, Capt. John P. Cameron III, University of Pittsburgh, Capt. Dan. J. Bulmer, University of Michigan, and Lieut. James G. Kitchen II, University of Pennsylvania.

CHEMICAL WARFARE ARSENAL

The War Department announced on July 29 the contract for construction of a Chemical Warfare Service Arsenal at Huntsville, Ala., to cost about \$29,000,000. Units comprising the complete arsenal will include eleven manufacturing plants, four chemical loading plants, a depot, a plant storage, laboratories, shops, offices, a hospital, fire and guard installations, utilities and all necessary appurtenances. Located on a tract of more than 30,000 acres, which was selected for its proximity to fuel and raw materials for construction and manufacturing, the arsenal will produce smoke materials and other chemical warfare agents for the military establishment.

HUMAN HAIR IS NOT PURCHASED BY ARMY

The War Department announced on July 7 that human hair is not being purchased by the Army. This announcement was made because of many requests for information concerning the sale of human hair as the result of a wire service story that "blond human hair" was needed by the Army in the manufacture of certain instruments.

ARMY RESERVE OFFICERS ORDERED TO ACTIVE DUTY

FIRST CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, First Corps Area, which comprises the states of Maine, Vermont, New Hampshire, Rhode Island, Massachusetts and Connecticut:

ADAMS, Arthur J, 1st Lieut, Bridgeport, Conn, Camp Lee, Va
AIKEN, Sidney, Lieut, Manchester, Conn, Camp Lee, Va
BEGG, Charles F, 1st Lieut, Providence, R I, Camp Lee, Va
BERMAN, Leo, 1st Lieut, Boston, Camp Lee, Va
BLOSSOM, Frank O, Major, Caribou, Maine, Fort George C Meade, Md
BUNCE, James W, Major, North Adams, Mass, Fort Devens, Mass
BURKE, Francis H, 1st Lieut, Rockville, Conn, Camp Lee, Va
BURNS, Edward D, 1st Lieut, Arlington, Mass, Camp Lee, Va
DURGIN, Lawrence N, Captain, Amherst, Mass, Camp Edwards, Mass
DUZMATI, Paul P, 1st Lieut, Bridgeport, Conn, Camp Lee, Va
EASTMAN, Oliver R, 1st Lieut, Burlington, Vt, Fort Ethan Allen, Vt
FAMIGLIETTI, Joseph A, 1st Lieut, East Boston, Mass, Camp Lee, Va
FREEDMAN, Herman S, Lieut, Cambridge, Mass, Camp Lee, Va
GIFFORD, William H, 1st Lieut, Concord, N H, Camp Lee, Va
GOODMAN, Max, Lieut, Roxbury, Mass, Camp Lee, Va
HARASIMOWICZ, Paul P, Captain, Gardner, Mass, Camp Lee, Va
HEFFERNAN, Edward V, 1st Lieut, Providence, R I, Camp Lee, Va
JOHNSON, Elwood G, Lieut, Wilham, Mass, Fort Banks, Mass
KELLER, Jay E, 1st Lieut, Burlington, Vt, Camp Forrest, Tenn
LAWLESS, Thomas F, 1st Lieut, Stamford Conn, Camp Lee, Va
MCGREGOR, Eugene B, 1st Lieut, Lisbon, N H, Camp Lee, Va
MCINTYRE, George A, 1st Lieut, Montpelier, Vt, Camp Forrest, Tenn
MILLETT, Frank A, Major, Greenfield, Mass, Fort Adams, R I
MINIHAN, John C, 1st Lieut, Haverhill, Mass, Camp Edwards, Mass

MOULTON Charles W, 1st Lieut, Boston, Army Base, Boston
MUELLER, Harry L, 1st Lieut, Winchester, Mass, Camp Lee, Va
MULCAHY, Richard E, 1st Lieut, Wellesley, Mass, Camp Edwards, Mass
NEWCOMB, Richard V, 1st Lieut, Burlington, Vt, Fort Rodman, Mass
SHENKER, Benjamin M, 1st Lieut, Hartford, Conn, Fort Devens, Mass
SMITH, Hugh A, 1st Lieut, New Haven, Conn, Camp Lee, Va
WEBBER, Edward P, 1st Lieut, Winthrop, Maine, Fort Oglethorpe, Ga
YANKAUER, Alfred, Jr, 1st Lieut, Boston, Fort Bragg, N C

Orders Revoked

BEGG, Charles F, Lieut, Providence, R I
FEINMAN, Maxwell H, 1st Lieut, Lynn, Mass
HEFFERNAN, Edward V, Lieut, Providence, R I
MCINTYRE, George A, Lieut, Montpelier, Vt
MONGILLO, Frank, Major, New Haven, Conn
MUELLER, Harry L, Lieut, Winchester, Mass
NILES, John O, 1st Lieut, Osterville, Mass
RUBENSTEIN, Abraham D, 1st Lieut, Brighton, Mass
SPIEGEL, Charles M, 1st Lieut, New Haven, Conn
WITTIG, Joseph E, Lieut, West Warwick, R I

CORRECTION

Lieutenant Geller on Active Duty.—In THE JOURNAL, July 5, page 46, under the First Corps Area, the name of 1st Lieut Philip S Geller, Newport, R I, was included among the orders revoked. Since his previous orders were revoked, Lieutenant Geller has again been ordered to active duty and is now serving at Fort Adams, R I

THIRD CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Third Corps Area, which comprises the states of Pennsylvania, Virginia, District of Columbia and Maryland:

BEAVERS, Charles Lee, 1st Lieut, Franklin, Va, Camp Grant, Ill
BERRY, Lorenzo Robert, Captain, Washington, D C, Fort Dix, N J
BLOCK, Louis Henry, 1st Lieut, Philadelphia, Camp Pendleton, Va
BYERS, John Maxwell, 1st Lieut, Hyattsville, Md, Camp Lee, Va
CAPLAN, Milton Louis, 1st Lieut, Ellwood City, Pa, Fort Belvoir, Va
COCHRAN, James Edward, 1st Lieut, Pittsburgh, Camp Lee, Va
CORRADO, Albert Guv, 1st Lieut, Pittsburgh, Indiantown Gap Military Reservation, Pa
DANISH, Jacob Mayr, 1st Lieut, Washington, D C, Camp Lee, Va
DEPROPHETIS, Nino, 1st Lieut, Chester, Pa, Camp Lee, Va
DIERWECHTER, Reuben James, 1st Lieut, Philadelphia, Camp Lee, Va
DORNENBURG, James Raymond, 1st Lieut, Carnegie, Pa, Camp Lee, Va
DOWNEY, Regis Tallon, 1st Lieut, Greensboro, Pa, Camp Lee, Va
EDDINGER, Leo Clement, 1st Lieut, Allentown, Pa, Camp Lee, Va
ELLIOTT, Israel Edward, Jr, 1st Lieut, Washington, D C, Fort Dix, N J
ERHARD, Gerald Arthur, 1st Lieut, Curwensville, Pa, Camp Lee, Va
ERVIN, Kenneth Dubois, 1st Lieut, Jenkintown, Pa, Camp Lee, Va
FORSTER, Hans Walter, Jr, 1st Lieut, Philadelphia, Camp Lee, Va
FREEDMAN, Abraham G, 1st Lieut, Philadelphia, Camp Lee, Va
FREEDMAN, Donald Kenneth, 1st Lieut, Washington, D C, Camp Grant, Ill
GARNER, Blune Rosenberger, 1st Lieut, Doylestown, Pa, Indiantown Gap Military Reservation, Pa
GASSAWAY, William Farrow, 1st Lieut, Ellicott City, Howard County, Md, Camp Lee, Va
GAYER, Leo Junior, 1st Lieut, Meyersville, Frederick County, Md, Camp Lee, Va
GILLIGAN, Frank Patrick, 1st Lieut, Ashley, Pa, Camp Lee, Va
GREENWOOD, George Roy, 1st Lieut, Sugar Notch, Pa, Camp Lee, Va
GREM, Francis Matthew, 1st Lieut, Philadelphia, Camp Lee, Va
GRIMES, James Thomas, 1st Lieut, Philadelphia, Camp Lee, Va
HAINES, Risley Trith, 1st Lieut, Baltimore, Fort George G Meade, Md
HAMDI, Turgut Nazif, 1st Lieut, Bryn Mawr, Pa, Camp Lee, Va
HOFFMAN, Frank David, 1st Lieut, Greensburg, Pa, Camp Lee, Va
HOLMBOE, Harris Studley, 1st Lieut, Charlottesville, Va, Camp Lee, Va
HOLT, Frederick Guy, 1st Lieut, Shamokin, Pa, Camp Lee, Va
HOON, James Richard, 1st Lieut, Monongahela, Pa, Camp Lee, Va
HURST, John Witmer, 1st Lieut, Altoona, Pa, Camp Lee, Va
IRWIN, Ralph Theodore, 1st Lieut, Lancaster, Pa, Camp Lee, Va
KACZYNSKI, Stanley Bernard, 1st Lieut, Pittsburgh, Holabird Quartermaster Depot, Baltimore
KAY, Alvin Irving, 1st Lieut, Washington, D C, Camp Lee, Va

KELLER, David Henry, Lieut Col, Stroudsburg, Pa, Camp Lee, Va
KELLY, Vernon Charles, 1st Lieut, Baltimore, Camp Lee, Va
KISTLER, William Stephen, 1st Lieut, Pennsburg, Pa, Camp Pendleton, Va
KLINE, Jacob Maurice, 1st Lieut, Ligonier, Pa, Camp Lee, Va
KNOWLES, Willard Edward, 1st Lieut, Philadelphia, Camp Lee, Va
KOSTYAL, John Louis, 1st Lieut, Pittsburgh, Camp Lee, Va
LANDIS, Lloyd Mervin, 1st Lieut, Lancaster, Pa, Camp Lee, Va
LARGE, Fred Denzel, 1st Lieut, Clairton, Va, Camp Lee, Va
LAURIA, Michael Herbert, 1st Lieut, Philadelphia, Camp Lee, Va
LEEBORN, William M, 1st Lieut, Philadelphia, Camp Lee, Va
LEWIS, Homer Hill, Jr, 1st Lieut, Clearfield, Pa, Camp Lee, Va
LYON, William Cochran, 1st Lieut, Ardmore, Pa, Camp Lee, Va
MAHER, Robert Campbell, 1st Lieut, Leechburg, Pa, Camp Lee, Va
MARTIN, Frederick Herman, 1st Lieut, Macungie, Pa, Camp Grant, Ill
McCORMICK, Richard Harry, 1st Lieut, Emsworth, Pa, Camp Grant, Ill
McCUNE, David Pollock, Jr, 1st Lieut, McKeesport, Pa, Camp Lee, Va
McGOVERN, William Joseph, 1st Lieut, Woodville, Pa, Camp Grant, Ill
MENSCH, Maurice, 1st Lieut, Washington, D C, Camp Lee, Va
MILNAMOW, Paul Thomas, 1st Lieut, Wilkes Barre, Pa, Camp Grant, Ill
MUNCHAK, Alexander Michael, 1st Lieut, Scranton, Pa, Camp Lee, Va
NADLER, Manuel Princeton, 1st Lieut, Ambridge, Pa, Camp Lee, Va
OGLESBY, Forrest Elliott, 1st Lieut, Oceana, Va, Camp Lee, Va
PILGRAM, Robert Hark, 1st Lieut, Lancaster, Pa, Camp Grant, Ill
ROMAINE, Hunter Huidekoper, 1st Lieut, Petersburg, Va, Camp Lee, Va
ROSEN, Harold G, 1st Lieut, Philadelphia, Camp Davis, N C
SAVAGE, Lester Wells, 1st Lieut, Philadelphia, Fort George G Meade, Md
SAYLOR, Blair Willard, 1st Lieut, Rockwood, Pa, Camp Grant, Ill
SCHAAF, Charles Francis, 1st Lieut, Erie, Pa, Camp Grant, Ill
SCHEIN, Robert Alexander, 1st Lieut, Homestead, Pa, Camp Grant, Ill
SCHINDLER, Blune Markwood, 1st Lieut, Cumberland, Md, Indiantown Gap Military Reservation, Pa
SCHINFELD, Louis Harry, 1st Lieut, Philadelphia, Camp Grant, Ill
SCOTT, Robert James, 1st Lieut, Onancock, Va, Camp Grant, Ill
SHAFFER, John Francis Regis, 1st Lieut, Pittsburgh, Camp Grant, Ill
SHARPS, Frank, 1st Lieut, Philadelphia, Camp Grant, Ill
SHENKIN, Henry Arnold, 1st Lieut, Philadelphia, Camp Grant, Ill
SILVERSTINE, Leshe Byron, 1st Lieut, Bradford, Pa, Camp Grant, Ill
SINGLETON, Albert Olin, Jr, 1st Lieut, Philadelphia, Camp Grant, Ill
STEELE, Ralph Edward, 1st Lieut, Carlisle, Pa, Indiantown Gap Military Reservation, Pa
STEINBERG, Edgar Irwin, 1st Lieut, Philadelphia, Camp Grant, Ill
STUTCH, Reuben, 1st Lieut, Pittsburgh, Camp Grant, Ill
TUFT, Harold Seymour, 1st Lieut, Philadelphia, Camp Grant, Ill
VILSACK, George Ray, 1st Lieut, Pittsburgh, Camp Grant, Ill

VOLLMER, Donald Henry, 1st Lieut, Takoma Park, Md, Camp Lee, Va
 WARSHAFSKY, Morton, 1st Lieut, Philadelphia, Camp Grant, Ill
 WEDDELL, James Russell, 1st Lieut, Elizabeth, Pa, Camp Lee, Va
 WELSH, Albert Eugene, Jr, 1st Lieut, Philadelphia, Camp Grant, Ill

WHILDIN, James Griffith, 1st Lieut, Lansford, Pa, General Dispensary, U S Army, Baltimore
 WILCOX, Homer Bowen, Jr, 1st Lieut, Kingston, Pa, Camp Lee, Va
 ZULICH, Philip Diefenderfer, 1st Lieut, Orwigsburg, Pa, Camp Lee, Va

Orders Revoked

ABRAMOVITZ, Leonard J, 1st Lieut, Baltimore
 CANADA, Charles C, 1st Lieut, Arlington, Va
 DANISH, Jacob Mayr, 1st Lieut, Washington, D C
 DUFAULT, Leo W, 1st Lieut, Washington, D C
 FEAR, Jesse G, 1st Lieut, Berwick, Pa
 GILMARTIN, Joseph A, Captain, Pittsburgh
 GRAY, Raymond J, Captain, Pittsburgh
 GREEN, Manuel E, Captain, Pittsburgh
 HARBOLD, Harold Valentine, 1st Lieut, York, Pa
 HEIMBACH, James A, Major, Altoona, Pa
 HOFFMAN, Franklin David, 1st Lieut, Greensburg, Pa
 JONES, Lawrence Paul, Captain, Emporia, Va
 KILLIUS, William J, 1st Lieut, Johnstown, Pa
 KITCHELL, James R, Captain, Bala Cynwyd, Pa
 LAKATOS, Nicholas R, 1st Lieut, Nanticoke, Pa

MAFFUCCI, Victor, Jr, 1st Lieut, Everett, Pa
 MAHER, Robert Campbell, 1st Lieut, Leechburg, Pa
 NATHANSON, Leon I, 1st Lieut, Earling, W Va
 PEARCE, Leroy S, 1st Lieut, Falkner, Miss
 REHER, Charles A, Jr, Captain, Clinton, Pa
 SCHINTLED, Louis Harry, 1st Lieut, Philadelphia
 SHAULIS, Frederick S, 1st Lieut, Indiana, Pa
 SOLOSKO, Alexander, Captain, Salisbury, Pa
 STEINER, Sylvan A, 1st Lieut, Washington, D C
 WALKER, Gale H, Captain, Polk, Pa
 WATKINS, Evan Lloyd, 1st Lieut, Philadelphia
 WEDDELL, James Russell, 1st Lieut, Elizabeth, Pa
 WINN, Washington C, 1st Lieut, Richmond, Va
 ZEMAN, Erwin Doehren, 1st Lieut, Erie, Pa

FOURTH CORPS AREA

The following additional medical reserve corps officers have been ordered to active duty by the Commanding General, Fourth Corps Area, which comprises the states of Tennessee, North Carolina, South Carolina, Alabama, Georgia, Mississippi, Florida and Louisiana:

ADAMS, Everett H, 1st Lieut, Rutledge, Ga, Camp Grant, Ill
 ANDERSON, William H, Jr, 1st Lieut, Atlanta, Ga, Fort Bragg, N C
 ANDERSON, William O, 1st Lieut, Alabama City, Ala, Camp Grant, Ill
 BARKSDALE, Irving S, Captain, Greenville, S C, Fort Bragg, N C
 BOAZ, Thurmond D, Jr, 1st Lieut, Shreveport, La, Fort Benning, Ga
 BOLAND, Joseph H, Captain, Atlanta, Ga, Camp Shelby, Miss
 BLACK, Irby Harry, 1st Lieut, Live Oak, Fla, Camp Shelby, Miss
 BLUM, Joseph E, Jr, 1st Lieut, Greenwell Springs, La, Camp Claiborne, La
 BREATH, Marshall Burt, 1st Lieut, New Orleans, Fort Bragg, N C
 BROWN, Richard K, 1st Lieut, Greenville, S C, Camp Davis, N C
 DAVIDGE, Lucious Lamar, 1st Lieut, Shreveport, La, Camp Wheeler, Ga
 DAVIS, Frank M, 1st Lieut, Corinth, Miss, Camp Livingston, La
 DOLAN, Thomas R, 1st Lieut, New Orleans, Camp Claiborne, La
 DONATHAN, Earl Raymond, 1st Lieut, Etowah, Tenn, Fort Bragg, N C
 ERWIN, J W, 1st Lieut, Blountville, Tenn, Camp Claiborne, La
 EVANS, Ira C, 1st Lieut, Charleston, S C, Camp Claiborne, La
 EVANS, Kenneth P, 1st Lieut, Sylacauga, Ala, Fort Oglethorpe, Ga
 FARMER, Joseph Arthur, 1st Lieut, Shelby, N C, Fort McClellan, Ala
 FERGUSON, William H, Captain, Memphis, Tenn, Fort Bragg, N C
 GAGHET, Fred S, 1st Lieut, Lakeland, Fla, Camp Blinding, Fla
 GESSLER, Carl N, 1st Lieut, McMinville, Tenn, Fort Benning, Ga
 GLEASON, Albert H, 1st Lieut, Umatilla, Fla, Fort Benning, Ga
 GREEN, Gordon L, 1st Lieut, Rome, Ga, McDill Field, Fla
 GROVE, Edward W, Captain, Gainesville, Ga, Camp Claiborne, La
 HANKS, James Monroe, 1st Lieut, Anderson, S C, Fort Bragg, N C
 HARGIS, Albert S, Jr, 1st Lieut, Birmingham, Ala, Camp Claiborne, La
 HENSON, Thomas A, 1st Lieut, Walstonburg, N C, Fort Benning, Ga
 HERD, Leslie Phillips, Major, Elizabethton, Tenn, Camp Stewart, Ga
 HICKMAN, Walter B, 1st Lieut, Louisville, Miss, Camp Claiborne, La
 HUDSON, Harry H, 1st Lieut, Cleveland, Tenn, Camp Livingston, La
 HUEY, Thomas Ford, Jr, 1st Lieut, Anniston, Ala, Camp Stewart, Ga
 JACOBS, Sydney, Captain, New Orleans, Camp Shelby, Miss
 JACKSON, James T, 1st Lieut, Montgomery, Ala, Fort Bragg, N C
 JENKINS, Harry H, Captain, Knoxville, Tenn, Fort Oglethorpe, Ga
 JONES, Clyde T, 1st Lieut, West Jefferson, N C, Camp Davis, N C
 KINBERGER, Frank R, 1st Lieut, New Orleans, Fort Jackson, S C
 LACEY, William H, 1st Lieut, Georgetown, S C, Camp Davis, N C
 LEVY, Morton Lee, 1st Lieut, Jonesville, La, Camp Polk, La
 LITTLE, Tom French, 1st Lieut, Tifton, Ga, Fort Benning, Ga
 LOVETT, Raymond E, 1st Lieut, New Orleans, Camp Davis, N C
 LOWRY, Harvey M, 1st Lieut, Memphis, Tenn, Fort Benning, Ga

LUCIDO, Joseph L, 1st Lieut, Elkin, N C, Fort Jackson, S C
 McCALL, Charles S, Jr, 1st Lieut, Bennettsville, S C, Fort Benning, Ga
 McPEAKE, William T, Jr, 1st Lieut, Morris Chapel, Tenn, Fort Benning, Ga
 MILLER, Samuel E, Captain, State Park, S C, Camp Shelby, Miss
 MORTON, John Buck, 1st Lieut, Gray, Ga, Camp Wheeler, Ga
 MUSARRA, Elmer A, 1st Lieut, Marietta, Ga, Fort McPherson, Ga
 NAVE, Dick Donnelly, 1st Lieut, Mountain City, Tenn, Fort Barrancas, Fla
 NEUKOM, George B, 1st Lieut, New Albany, Miss, Fort Benning, Ga
 NEWTON, Isaac James, 1st Lieut, Nashville, Tenn, Camp Wheeler, Ga
 OLIVER, Benjamin M, Jr, 1st Lieut, State Park, S C, Fort McClellan, Ala
 OWINGS, Francis P, 1st Lieut, Union, S C, Camp Shelby, Miss
 PALIK, Emil Emery, 1st Lieut, New Orleans, Camp Shelby, Miss
 ROBBINS, Bernard L, 1st Lieut, Miami Beach, Fla, Fort Benning, Ga
 ROBINSON, William J, 1st Lieut, Matthews, S C, Fort Bragg, N C
 ROPER, C James, 1st Lieut, Jasper, Ga, Fort Benning, Ga
 SCHNEIDER, Meyer M, 1st Lieut, Savannah, Ga, Camp Blanding, Fla
 SEAY, Hillis L, Captain, Huntersville, N C, Camp Shelby, Miss
 SHERER, Raymond J, 1st Lieut, Jasper, Ala, Camp Wheeler, Ga
 SHURE, Irving Isadore, 1st Lieut, Bethel, N C, Camp Polk, La
 SMITH, Leo, 1st Lieut, Weyeross, Ga, Fort Jackson, S C
 SODEMAN, William A, 1st Lieut, New Orleans, Camp Wheeler, Ga
 SOSKIS, Elbert Joque, 1st Lieut, Mulberry, Fla, Fort Benning, Ga
 SWISHER, Otto Jay, 1st Lieut, Covington, Tenn, Camp Blinding, Fla
 THOMAS, Ford A, Captain, Urania, La, Camp Claiborne, La
 THOMAS, John Henry, 1st Lieut, Gainesville, Fla, Camp Stewart, Ga
 THOMPSON, Charles C, Jr, 1st Lieut, Columbia, Miss, Fort Moultrie, S C
 TRAPP, Walter Russell, 1st Lieut, Tusculumbia, Ala, Camp Forrest, Tenn
 TURNER, James Dormon, 1st Lieut, Winstboro, S C, Fort Jackson, S C
 VARNER, Claude F, 1st Lieut, Memphis, Tenn, Camp Shelby, Miss
 VON WERSOWETZ, Odon F W, 1st Lieut, Chattanooga, Tenn, Camp Blanding, Fla
 WALLIS, Thomas H, 1st Lieut, Ocala, Fla, Fort McPherson, Ga
 WATSON, Francis M, 1st Lieut, Chipley, Fla, Quartermaster's Depot, New Orleans
 WILKINS, William B, 1st Lieut, West Palm Beach, Fla, Camp Wheeler, Ga
 WILEY, Felix J, Jr, 1st Lieut, New Orleans, Fort Bragg, N C
 WILLIAMS, Harvey McL, 1st Lieut, Aberdeen, Miss, Camp Wheeler, Ga
 WILSON, Isaac R, Jr, 1st Lieut, Charleston, S C, Camp Davis, N C
 WEINSTEIN, Albert, Major, Nashville, Tenn, Fort Oglethorpe, Ga
 WEINSTEIN, Bernard M, Captain, Nashville, Tenn, Camp Livingston, La
 WESTERFIELD, Charles W, 1st Lieut, Augusta, Ga, Camp Livingston, La
 WOOD, Charles S, 1st Lieut, New Orleans, Fort Barrancas, Fla
 WOODS, Harold Vernon, 1st Lieut, Nashville, Tenn, Fort Jackson, S C

Orders Revoked

BAUGH, Wendell P, Major, Decatur, Ala
 BOLAND, Joseph H, Captain, Atlanta, Ga
 BOOTH, Thomas Eugene, 1st Lieut, Montgomery, Ala
 BROWN, Randall Gay, 1st Lieut, Graymont, Ga
 CLARK, Arthur Lee, 1st Lieut, Iowa, La
 COX, Marcus Edward, 1st Lieut, Charleston, S C
 COYLE, Daniel Joseph, Captain, Birmingham, Ala
 EHLERT, William E, 1st Lieut, New Orleans
 GORMAN, John M, Major, Jacksonville, Fla
 HAIK, George M, 1st Lieut, New Orleans
 HILLARD, Irving R, 1st Lieut, Jackson, Tenn
 IMERMANN, Harold M, 1st Lieut, 6th Corps Area
 JACKSON, James T, 1st Lieut, Montgomery, Ala
 JACOBS, Sydney, Captain, New Orleans
 JENKINS, Hughes B, Major, Donaldsonville, Ga
 JERNIGAN, Sterling H, 1st Lieut, Atlanta, Ga
 KELLEY, Oscar Lee, 1st Lieut, Raiford, Fla

KLUGH, George F, Jr, 1st Lieut, Atlanta, Ga
 LAMBETH, Samuel S, III, 1st Lieut, Durham, N C
 MARTIN, George H, 1st Lieut, Anguilla, Miss
 MASTERS, Elias W, 1st Lieut, Anderson, S C
 MITCHELL, George J, 1st Lieut, Meridian, Miss
 NEUKOM, George B, 1st Lieut, New Albany, Miss
 PALIK, Emil Emery, 1st Lieut, New Orleans
 PHILLIPS, Herbert S, 1st Lieut, Holly Springs, Miss
 PREVO, Samuel B, 1st Lieut, Memphis, Tenn
 ROYALS, James Lee, 1st Lieut, Meridian, Miss
 SCHAPIRO, Mark Meyer, 1st Lieut, Birmingham, Ala
 SODEMAN, William A, 1st Lieut, New Orleans
 WALKER, Richard H, Jr, Captain, Orlando, Fla
 WILSON, Isaac R, Jr, 1st Lieut, Charleston, S C
 WOOD, Frank Alton, Captain, Monroe, La
 WORLEY, James Harr, 1st Lieut, Asheville, N C

FIFTH CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Fifth Corps Area, which comprises the states of Ohio, West Virginia, Indiana and Kentucky:

ALBERT, Irwin C, 1st Lieut, Cincinnati, Fort Thomas, Ky
ALLENBACH, Theodore C, Captain, Columbus, Ohio, Fort Hayes, Ohio
ARMSTRONG, Charles B, 1st Lieut, Cincinnati, Fort Hayes, Ohio
BENNETT, Willard D, 1st Lieut, Lexington, Ky, Bowman Field, Ky
BLASSER, Seymour, 1st Lieut, Outwood, Ky, Bowman Field, Ky
CRONE, John T, Jr, 1st Lieut, Milford, Ohio, Fort Knox, Ky
DAVIDOW, Sidney L, 1st Lieut, North Jackson, Ohio, Air Base, Fort Wayne, Ind
DAVIS, Howell J, Captain, Owensboro, Ky, Bowman Field, Ky
DAVIS, Samuel G, 1st Lieut, Brazil, Ind, Bowman Field, Ky
DEOREO, Gerard A, 1st Lieut, Cleveland Heights, Ohio, Fort Thomas, Ky
DOWNING, Robert E, 1st Lieut, Lexington, Ky, Bowman Field, Ky
DULIN, Basil B, 1st Lieut, Bedford, Ind, Fort Hayes, Ohio
FANELLI, Walter, Captain, Cleveland, Camp Forrest, Tenn
FRIELICH, Myron A, 1st Lieut, Zanesville, Ohio, Baer Field, Fort Wayne, Ind
HARPER, EDWARD O, Major, East Cleveland, Ohio, Fort George G Meade, Md
HAUSS, John T, 1st Lieut, Celina, Ohio, Air Base, Charlotte, N C
HERBST, Mark G, 1st Lieut, Canton, Ohio, Fort Hayes, Ohio
HICKMAN, Archibald L, Jr, 1st Lieut, Hammond, Ind, Camp Grant, Ill
HOLMBERG, Robert E, 1st Lieut, Cleveland, Fort Wayne Air Base, Fort Wayne, Ind

SIXTH CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Sixth Corps Area, which comprises the states of Wisconsin, Illinois and Michigan:

ADAMS, Vail B, 1st Lieut, Evanston, Ill, Air Base, Tucson, Ariz
AHLG, Charles E, 1st Lieut, Chicago, Medical Replacement Training Center, Camp Grant, Ill
BAUER, Benedict J, 1st Lieut, Detroit, 30th Division, Fort Jackson, S C
BERGSTROM, Paul L, 1st Lieut, Kirkland, Ill, 29th Division, Fort Meade, Md
BERMAN, Benjamin B, 1st Lieut, East St Louis, Ill, 33d Division, Camp Forrest, Tenn
BORNSTEIN, John S, 1st Lieut, Chicago, Station Complement, Camp Wheeler, Ga
BRAUDE, Abraham I, 1st Lieut, Chicago, 29th Division, Fort Meade, Md
BRODSKY, Abraham, 1st Lieut, Manteno, Ill, 9th Station Hospital, Fort McClellan, Ala
BUNCHMAN, Lester P, 1st Lieut, Clinton, Ill, 33d Division, Camp Forrest, Tenn
CAMERON, Wayne T, 1st Lieut, Evanston, Ill, 119th Field Artillery, Fort Leonard Wood, Mo
CHERNER, Abraham M, 1st Lieut, Chicago, 10th Station Hospital, Camp Claiborne, La
CHRISTIANSON, Oscar O, Captain, Peoria, Ill, 1,608th Corps Area Service Unit (Medical Section), Camp Grant, Ill
CLIFFORD, Robert P, 1st Lieut, Detroit, 177th Field Artillery, Fort Leonard Wood, Mo
CONLEY, Raymond H, 1st Lieut, Chicago, Medical Replacement Training Center, Camp Grant, Ill
DOUGHERTY, Roderick J, 1st Lieut, Chicago, 33d Division, Camp Forrest, Tenn
EMANUELL, Nicola V, 1st Lieut, Chicago, Station Complement, Camp Davis, N C
FEINBERG, Milton, 1st Lieut, Chicago, 191st Tank Battalion, General Headquarters Reserve National Guard, Fort Meade, Md
FELDMAN, Abraham W, 1st Lieut, Chicago, 33d Division, Camp Forrest, Tenn
FLEMING, James T, 1st Lieut, Chicago, 10th Station Hospital, Camp Claiborne, La
FRIEDMAN, Jack, 1st Lieut, Chicago, Station Complement, Camp Polk, La
GOLLIN, Frank F, 1st Lieut, LaFarge, Wis, 119th Field Artillery, Fort Leonard Wood, Mo

Orders Revoked

ALLISON, Olaf W, 1st Lieut, Danville, Ill, 27th Division, Fort McClellan, Ala
BUCKLEY, Clarence H, Captain, Menomonee, Wis, 10th Station Hospital, Camp Claiborne, La
CRANE, Wesley T, 1st Lieut, Northbrook, Ill
HILL, Edward L, 1st Lieut, Jacksonville, Ill
HURBLF, William F, Jr, 1st Lieut, Decatur, Ill
JANA, Joseph T, 1st Lieut, Berwyn, Ill, 29th Division, Fort Meade, Md
JANSON, Carl H, 1st Lieut, Homewood, Ill, 33d Division, Camp Forrest, Tenn
LARRABEE, Walter F, Jr, 1st Lieut, Chippewa Falls, Wis, Station Complement, Camp Wheeler, Ga
McRAE, Louis A, 1st Lieut, Houston, Texas, 135th Medical Regiment, Camp Shelby, Miss

HUNTER, Shelton B, Jr, 1st Lieut, Lexington, Ky, Bowman Field, Ky
JOHNSTON, Robert L, Captain, Silverton, Ohio, Fort Leonard Wood, Mo
KENNEDY, Julian C, 1st Lieut, Indianapolis, Bowman Field, Ky
KESSLER, Morris M, 1st Lieut, Cleveland Heights, Ohio, Fort Hayes, Ohio
KING, George L, Captain, Alliance, Ohio, Fort George G Meade, Md
KISTLER, Victor N, 1st Lieut, Columbus, Ohio, Fort Wayne, Ind
MARREN, John J, Captain, Lexington, Ky, Fort Knox, Ky
MECKSTROTH, Paul G, 1st Lieut, New Knoxville, Ohio, Fort McClellan, Ala
MILLER, Roland E, 1st Lieut, Plymouth, Ind, Fort Leonard Wood, Mo
MISHLER, Howard V, 1st Lieut, Cleveland, Fort Knox, Ky
NEARY, Edward P, Captain, Cleveland Heights, Ohio, Fort Knox, Ky
NEFF, Frank R, Captain, London, Ohio, Fort Wayne, Ind
PHINNEY, James D, 1st Lieut, Cincinnati, Kelly Field, Texas
REEDER, Henry H, Captain, Jeffersonville, Ind, Fort Knox, Ky
ROSSMAN, Philip L, 1st Lieut, Cleveland, Fort Wayne, Ind
ROTMAN, Harry G, 1st Lieut, Jasonville, Ind, Fort Knox, Ky
SAUER, Richard T, 1st Lieut, Dayton, Ohio, Fort Knox, Ky
SISEK, Henry, 1st Lieut, Youngstown, Ohio, Fort Hayes, Ohio
SMYERS, Webster C, 1st Lieut, Dayton, Ohio, Fort Hayes, Ohio
STOLL, William A, 1st Lieut, Louisville, Ky, Camp Shelby, Miss
STRAUSS, Victor M B, 1st Lieut, Cincinnati, Fort Wayne, Ind
VAN HORN, Earl C, 1st Lieut, Springfield, Ohio, Fort Knox, Ky
VOTYPKA, Edward A, 1st Lieut, Cleveland, Fort Knox, Ky
VOTYPKA, Joseph A, 1st Lieut, Cleveland, Fort Knox, Ky
WEBB, Jack G, 1st Lieut, Louisville, Ky, Camp Shelby, Miss
WEBB, William M, 1st Lieut, Indianapolis, Bowman Field, Ky
WEISS, Morris, 1st Lieut, Cleveland, Fort Knox, Ky
ZEITHAML, Carl E, 1st Lieut, Cleveland, Fort Wayne, Ind

HOLDEN, David, Lieut Colonel, Chicago, 182d Field Artillery, Fort Leonard Wood, Mo
HORODKO, Edward J, 1st Lieut, Chicago, 33d Division, Camp Forrest, Tenn
HOYT, Arthur W, 1st Lieut, Battle Creek, Mich, 182d Field Artillery, Fort Leonard Wood, Mo
JONES, Robert R, 1st Lieut, Coal Valley, Ill, 33d Division, Camp Forrest, Tenn
KARRAS, Samuel J, 1st Lieut, Melrose Park, Ill, 30th Division, Fort Jackson, S C
LAM, Francis Lee, 1st Lieut, Battle Creek, Mich, 33d Division, Camp Forrest, Tenn
LAMPERT, Elmer G, 1st Lieut, Wheaton, Ill, Armored Force Troop Unit, Fort Benning, Ga
LEMBERG, Louis, 1st Lieut, Chicago, 177th Field Artillery, Fort Leonard Wood, Mo
LOISELLE, Albert O, 1st Lieut, Chicago, Station Hospital, Fort Sam Houston, Texas
LORITZ, Anthony T, 1st Lieut, Chicago, 207th General Hospital, Camp Livingston, La
LOSEFF, Samuel A, 1st Lieut, Chicago, 33d Division, Camp Forrest, Tenn
MARESH, Everett R, 1st Lieut, Detroit, 33d Division, Camp Forrest, Tenn
NEWELL, Robert H, 1st Lieut, Oak Park, Ill, Scott Field, Ill
OBERHILL, Harold R, 1st Lieut, Chicago, 135th Medical Regiment, Camp Shelby, Miss
OTTENSTEIN, Harold H, 1st Lieut, Milwaukee, Replacement Center Infirmary, Camp Grant, Ill
PERKINS, Robert D, 1st Lieut, Moline, Ill, 106th Cavalry, Camp Livingston, La
RANNEY, Alden B, 1st Lieut, Oak Park, Ill, 33d Division, Camp Forrest, Tenn
SCOTT, Wilbert E, Jr, 1st Lieut, Chicago, Medical Replacement Training Center, Camp Grant, Ill
STANLEY, Sherburn M, 1st Lieut, Detroit, 177th Field Artillery, Fort Leonard Wood, Mo
WAGLEY, Perry V, Captain, Pontiac, Mich, U S Army Induction Station, Milwaukee
WALGER, William D, 1st Lieut, Ashley, Ill, 135th Medical Regiment, Camp Shelby, Miss
WESCOTT, Royal J, 1st Lieut, Marquette, Mich, 182d Field Artillery, Fort Leonard Wood, Mo
WASSERMAN, Reuben R, 1st Lieut, Chicago, 27th Division, Fort McClellan, Ala
WILLIAMS, William R, 1st Lieut, Riverside, Ill, Station Complement, Camp Davis, N C

MALOOF, George J, 1st Lieut, Madison, Wis, 135th Medical Regiment, Camp Shelby, Miss
MAXWELL, James H, 1st Lieut, Detroit
PFETTER, Isidore S, 1st Lieut, Elmhurst, Mich, 33d Division, Camp Forrest, Tenn
RICHARDS, Ned W, 1st Lieut, Saginaw, Mich, Station Complement, Camp Davis, N C
ROSEN, Benjamin B, 1st Lieut, Chicago
ROYCE, Grant E, 1st Lieut, Harvard, Ill, U S Army Induction Station, Milwaukee
SLAYBAUGH, James C, Captain, Milwaukee
WEIDNER, Morris R, 1st Lieut, Dolton, Ill
WILLIAMS, William R, 1st Lieut, Riverside, Ill

ORGANIZATION SECTION

MEDICAL LEGISLATION

DISTRICT OF COLUMBIA

Changes in Status.—H. R. 4599 has passed the House and has been reported to the Senate, authorizing the Federal Security Administrator to accept gifts for St. Elizabeths Hospital and to provide for the administration of such gifts. H. R. 4660 has passed the House and has been reported to the Senate, amending an act providing aid to needy blind persons of the District of Columbia by authorizing the expenditure of funds for necessary burial expenses of such persons who while living were receiving aid under the act. H. R. 4498 has passed the House and is pending in the Senate with a favorable

committee report, authorizing the Federal Security Administrator to admit to St. Elizabeths Hospital in the District of Columbia, for treatment, certain officers, clerks and employees in the foreign service who have been legally adjudged insane in any foreign country and with respect to whom it has been impossible to establish a legal residence in one of the states, territories or the District of Columbia. The bill provides that at the request of any such patient, his relatives or friends, a hearing shall be held in the District Court of the United States for the District of Columbia on his mental condition and on the right of the superintendent of St. Elizabeths Hospital to hold him for treatment.

MEDICAL ECONOMIC ABSTRACTS

NEW LOW DEATH RATE

According to the statisticians of the Metropolitan Life Insurance Company the 1941 January-June mortality experience of the company's industrial policyholders set a new low death rate record of 8 per thousand for the first six months of 1941. From present indications it seems likely that the rate for the full year will be among the lowest in the company's history.

Among the respiratory diseases, pneumonia mortality for the first six months of this year declined 13.2 per cent below the rate for the corresponding period of 1940, while the tuberculosis rate of 44.8 per hundred thousand is the lowest of any January-June period.

One of the most "satisfactory" features of the 1941 half year record is the continued decline in maternal mortality, for which the death rate this year was slightly lower than in 1940 and only a little more than half that of 1935. And this was in spite of the fact that the marriage rate is up and the number of births has increased materially.

The statisticians declare that the "only really disturbing element in the mortality record for the first half of 1941 is the high incidence of fatal accidents, particularly motor vehicle accidents, mortality from which was 26.1 per cent higher than in the corresponding period of 1940.

THE INDUSTRIAL MEDICAL SERVICE OF THE STANDARD OIL COMPANY OF NEW JERSEY AND AFFIL- IATED COMPANIES

Neglect of employee absenteeism from preventable sickness or accident is not regarded as sound business by many large corporations. The widespread activities of the 23 year old medical department of the Standard Oil Company of New Jersey exemplify to what extent preventive industrial medicine has been accepted as indispensable by enlightened management.¹ The company operates in the United States, Europe, the East and West Indies and South America. It requires medical personnel and facilities, as indicated in table 1.

The services of medical examiners who operate on a fee basis are needed mainly to investigate the physical qualifications of candidates for employment in areas where concentrations of employees are insufficient to justify the appointment of full time physicians and to provide for direct medical or surgical service for industrial accidents or occupational disease. In the tropics thirty-two hospitals are maintained to accommodate the medical, surgical and obstetric requirements of employees and their

families. Elsewhere employees must consult their own family physicians for any form of treatment. Altogether this industrial medical service touches in some manner the physical welfare of 186,344 people engaged in the production, transportation and sale of petroleum products.

TABLE 1.—Medical and Other Facilities

Full time physicians.....	109
Part time physicians.....	23
Dentists.....	2
Registered nurses.....	101
Other medical personnel.....	400
Medical examiners (fee basis).....	1,010
Hospitals.....	32
Hospital beds.....	1,011

Under this system an administrative formula has been developed which works well in any location. Local adjustments are necessary to meet the requirements of climate, terrain, racial strains, unusual working conditions or specific occupational exposures. As in all soundly conducted industrial medical departments, principal reliance rests on placement and periodic health examinations, prophylaxis, sanitation, and the maintenance and proper interpretation of medical records and statistics. From its own statement, the company bases its evaluation of medical trends and results on every case of lost time disability lasting one or more calendar days. This is a rare and increasingly valuable depository of clinical information. The regular analysis of these records ought to be made widely available to the general profession as well as to industrial physicians. The company statisticians have determined that the average days of disability for each one of their own employees

TABLE 2.—Frequency of Sickness and Injuries

	Frequency Rates per 1,000 Employees Per Annum					
	Number of Employees	Total	Sick-ness	Non-Indus-trial In-juries	Indus-trial In-juries	Non-ef-fective Rates
United States...	30,515	574.02	543.21	22.20	9.15	17.29
Europe.....	3,924	333.51	295.26	18.60	19.83	14.81
Tropics.....	37,083	479.03	412.00	22.62	47.47	11.59
Total.....	71,522	512.14	462.45	22.22	27.47	14.21

in the United States is six and thirty-one one-hundredths calendar days, considerably under the usually recorded figure of eight plus days for all American industry. As might be

1. The Medical Bulletin of the Standard Oil Company (New Jersey) and Affiliated Companies, vol. 5, no. 1, June 1941.

expected, industrial injury rates have been regularly decreasing in this same group of employees. Sickness disability, however, has regularly increased for the past five years or more. One reason has been the increased incidence of common colds and influenza, a situation noted even in the group of employees working in the tropics. There are other more obscure causes, related to liberalization of sickness benefit plans, labor unrest and general apprehension resulting from world disturbances. Another curious and unexplained statistical result is the higher incidence of appendicitis in our own Southwest. An epitomized statistical summary is itemized in table 2. The column headed "Noneffective Rates" refers to the average daily number of disabled employees per thousand. This method of estimating economic loss resulting from sickness and injury is considered to be more useful than frequency rates alone.

A good share of investigation is directed at problems in sanitation and tropical medicine, especially malaria and amebiasis. Additional observations are being made on the effect of influenza vaccine on volunteers. A systematic study is in progress of 800 employees with hypertension on whom accurate medical records have been maintained for twenty years.

These facts and relationships about one of the large industrial organizations of the world were displayed in exhibit form at the recent annual session of the American Medical Association in Cleveland. Perhaps if other similar organizations would do likewise the general profession would obtain a far better realization of the modern objectives of industrial health.

MISSOURI GROUP HOSPITAL SERVICE

According to a report on five years of operation, the Group Hospital Service of Missouri is "the first community voluntary service plan to be inaugurated by a medical society in cooperation with the hospitals." It also claims to have established, during these five years, reserves which are among the three highest in the country and "to be the first to serve rural areas through a State Farm Bureau Federation."

The principal shortcoming at this time, according to the report, is the need of an even lower cost plan to reach the more limited and less privileged income group of workers. A committee of the trustees is at work and will present findings to the trustees in due course. In this way it is hoped to reach the great percentage of American workers earning less than \$1,200 annually.

Comparing the fiscal years 1939-1940 and 1940-1941, there has been an increase of 58 per cent in assets and 51 per cent in membership, while administrative costs have decreased from 15.1 per cent to 13.2 per cent. There has been a slight rise in the number of days of hospitalization per member year after the member has been in the plan for three years, and a general rise in the percentage of the income paid for maternity care. The report classifies all diseases hospitalized by average hospital days and amounts paid by Group Hospital Service.

WOMAN'S AUXILIARY

Georgia

The Woman's Auxiliary to the Georgia Medical Society held a recent meeting at the home of Mrs. J. H. Pinkolsier in Savannah, Mrs. J. C. Metts presiding. A report from the Christmas card chairman, Mrs. J. E. Porter, showed a profit of \$49.79 from the sales.

It was decided that the health committee and public relations committee place the pamphlet "Priceless Heritage" in beauty parlors and other suitable public places.

W. W. McCune, assistant school superintendent, gave an illustrated talk on "Our Health Program."

The Woman's Auxiliary to the Baldwin Medical Society held a recent meeting at the home of Mrs. C. B. Fulghum. Dr. J. R. Litton gave a talk on public health work. It was announced that members will contribute books and magazines to the Baldwin Blues' reading room.

Illinois

The Bureau county auxiliary held a joint meeting at Princeton with the auxiliary of the North Central Illinois Medical Association. The program, of which Mrs. M. A. Nix was chairman, opened with a tea at the Nix home. Dinner was served at the Presbyterian Church, after which Mrs. H. J. Dooley spoke on "The Aims of the Auxiliary," and Dr. Harold Camp, secretary to the Illinois State Medical Society, talked on "What the Auxiliary Can Do to Help Medicine."

Michigan

The project for the year of auxiliary to the Grand Traverse-Benzie-Leelanau Medical Society was a drive for funds for an iron lung to be donated to Munson Hospital. The drive was successful; they purchased an iron lung, costing \$1,500, and an infant respirator for the hospital, at a cost of \$375, and had some funds left.

The members of the auxiliary to the Ingham County Medical Society entertained their husbands with a Bohemian feast which preceded the yearly Keno Party of the society. This event has been enjoyed for several years and receives enthusiastic support.

Oregon

The Woman's Auxiliary to the Multnomah County Medical Society met recently with fifty-six members present. Dr. Edward Hume of the National Christian Mission spoke on

"Religion and Health." Later Mr. W. Jay Smith, president of the Oregon Wild Life Federation, addressed the group on "Conservation of Wild Life in Oregon." A movie entitled "The Polluted Willamette" was shown.

Pennsylvania

At a meeting of the Allegheny County auxiliary the membership chairman, Mrs. Joseph Soffel, presented the names of sixteen new members. The past president of the state society, Dr. Charles H. Henninger, talked on "Medical Preparedness." The remainder of the afternoon program was a musicale by Matilde McKinney, pianist of the Pittsburgh Symphony Orchestra.

Texas

Bowie-Miller counties auxiliary met recently at the home of Mrs. Roy F. Baskett, Texarkana, with Mrs. Tyson presiding.

Dr. Preston Hunt, president of the state medical association, spoke on "How the Auxiliary Serves the Medical Profession." Dr. W. W. Bauer of the Bureau of Health Education of the American Medical Association addressed several groups in Texarkana, February 11, under the auspices of the auxiliary: Texarkana Rotary Club, Texarkana College Assembly, Arkansas High School Assembly and a public meeting at the Congregational Church. Dr. Bauer's appearance in Texarkana under the auspices of the auxiliary was in celebration of Doctor's Day. Members of the committee in charge of this function were Mes. Ralph Cross, Roy Baskett, Harry Murry, William Hibbitts, H. E. Longino, S. A. Collom Jr., J. T. Robison, W. Decker Smith and Reavis Pickett. Mrs. Collom was general chairman of arrangements for Doctor's Day.

CORRECTION

Honorary Members.—At the recent annual meeting of the Woman's Auxiliary to the American Medical Association in Cleveland, the auxiliary voted to confer honorary membership on Mrs. Samuel Clark Red, Houston, Texas; Mrs. Franklin P. Gengenbach, Denver; Mrs. John O. McReynolds, Dallas, Texas, and Mrs. Willard C. Bartlett, St. Louis. The name of Mrs. V. E. Holcombe, Charleston, W. Va., was erroneously included in this list when published in *THE JOURNAL* July 12, page 125.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Human Case of Plague.—A fatal human case of plague has been reported in Siskiyou County, with onset on June 14 and death on June 26. The disease was reported in a 10 year old boy residing near Montague. The diagnosis was confirmed bacteriologically. According to *Public Health Reports*, July 4, the source of the infection has not been determined, but it is believed to have been ground squirrels.

COLORADO

Personal.—Dr. George W. Miel, for forty-seven years a member of the staff of St. Anthony's Hospital, Denver, was honored at a banquet and celebration in the nurses' home at the hospital recently in recognition of his long service.

State Furnishes Sulfathiazole for Gonorrhea.—The division of venereal disease control of the state department of health has made available to all physicians in the state free drugs for the treatment of medically needy patients infected with gonorrhea. Sulfathiazole will be distributed in individual bottles of fifty tablets on request by any physician who reports a case of gonorrhea on the regular confidential report card.

CONNECTICUT

Annual Clinical Congress.—The seventeenth clinical congress of the Connecticut State Medical Society will be held at the Sterling Law Buildings, New Haven, September 16-18. The following out of state speakers are on the program:

Dr. Frank H. Lahey, Boston, President of the American Medical Association, Estimation and Management of the Bad Surgical Risk Case.
Dr. Oscar F. Cox, Boston, Treatment and Nationwide Control of Gonococcal Infections.

Dr. Emil Novak, Baltimore, Female Hormones in Clinical Medicine.
Drs. James L. Poppen and Gilbert E. Haggart, Boston, The Best Method of Examining a Back.

Dr. Robert H. Kennedy, New York, Treatment of Fresh Wounds: Chemotherapy, Closed Plaster, etc.

Dr. Eli Jefferson Browder, Brooklyn, Immediate Treatment of Head Injuries.

Dr. Yale D. Koskoff, Pittsburgh, Demonstration of Essentials of a Neurological Examination for the General Practitioner.

George St. J. Perrott, Bethesda, Md., Physical Defects in the General Population.

Dr. Irvine H. Page, Indianapolis, Hypertension.

Dr. Ernst P. Boas, New York, Predisposing Factors in Myocardial Infarction.

Dr. Samuel A. Levine, Boston, Modern Treatment of Congestive Heart Failure.

Dr. Frank D. Lathrop, Boston, Recent Developments in the Treatment of Deafness.

Dr. Burrill B. Crohn, New York, Diagnosis and Treatment of Bleeding from the Stomach.

Dr. Thomas Francis Jr., New York, Treatment of Virus Infections.

Dr. Grantley W. Taylor, Boston, Mouth Tumors.

Dr. Matthew Walzer, Brooklyn, Gastrointestinal Allergy.

Dr. Jerome P. Webster, New York, Modern Treatment of Burns.

A feature will be the special course in traumatic surgery to be given under the direction of Dr. Samuel C. Harvey, William H. Carmalt professor of surgery, Yale University School of Medicine. It will begin during the congress and continue at weekly intervals until completed.

FLORIDA

Changes in Health Officers.—Dr. Jack B. Eason, director of the maternal and child health division of the Arizona State Board of Health, Phoenix, has been appointed director of the Lake County Health Department, succeeding Dr. Arthur W. Newitt, Tavares, who has been named director of the bureau of local health service of the state board of health, it is reported.

Special Society Elections.—Dr. Sherman B. Forbes, Tampa, has been elected president of the Florida Society of Ophthalmology and Otolaryngology, succeeding Dr. Hermon Marshall Taylor, Jacksonville. Other officers include Drs. Shaler A. Richardson, Jacksonville, vice president, and Carl E. Dunaway, Miami, secretary-treasurer. Dr. Wiley M. Sams,

Miami, was elected president of the Florida Association of Dermatology and Syphilology and Dr. Lauren M. Sompayrac, Jacksonville, reelected secretary. Officers chosen by the Florida Association of Industrial Surgeons were Drs. Frank D. Gray, Orlando, president-elect; George Frederick Oetjen, Jacksonville, president; William G. Harris, Jacksonville, vice president, and Kenneth A. Morris, Jacksonville, secretary. The Florida Radiological Society elected the following officers: Drs. John N. Moore, Ocala, president; Elliott M. Hendricks, Fort Lauderdale, vice president, and Walter A. Weed, Orlando, secretary.

GEORGIA

Personal.—Dr. Frank K. Boland, Atlanta, was elected president of the Emory University Alumni Association at the annual meeting in June, and Benjamin T. Carter, D.D.S., Atlanta, and Dr. Harold J. Starr, Chattanooga, Tenn., were elected vice presidents.

Prize Winning Papers.—The Fulton County Medical Society, Atlanta, announces that the following papers have been given cash awards in the 1941 competition. Both were submitted from Grady Hospital. First prize of \$20 went to Drs. Harry H. Clemons and H. Stephen Weems for their work on "Staphylococcal Pneumonia in Infants: Occurrence of Pneumopyothorax," and second prize of \$10 to Drs. Abraham S. Velkoff and Robert F. Mabon for "Reliability of the Fishberg Concentration Test in Normal Pregnancy and the Puerperium."

ILLINOIS

Typhoid Outbreak.—Eight cases of typhoid were reported to the state health department from DuQuoin between July 7 and August 1. The source of the outbreak had not been determined at the time of the report.

Epidemiologist for State Institutions.—Dr. Arnold M. Cohn, district health superintendent in charge of Christian, Fayette, Effingham, Montgomery and Shelby counties with headquarters at Pana, has been appointed to the newly created position of communicable disease consultant and epidemiologist from the department of public health to the eighteen institutions under the state department of public welfare.

Incubators Available for Loan.—Two hundred metal incubators for the care of premature babies are now available on loan throughout the state. They were built at the request and under the supervision of the state department of public health by the Springfield Work Experience Center of the National Youth Administration and will be placed in each of the state's twenty-one district health offices, ready for speedy emergency use in supplementing the permanent incubator facilities of hospitals. Among the 4,464 infant deaths reported in Illinois in 1939 nearly a third, 1,431, were attributed directly to premature birth.

Chicago

Course in Pediatrics.—The Children's Memorial Hospital will sponsor a graduate course in pediatrics, October 13-November 8. The work will be at the hospital with the exception of one afternoon a week at the Municipal Tuberculosis Sanitarium and one period a week in the contagious department of Cook County Hospital. The course is intended for general practitioners and for those especially interested in pediatrics. The fee will be \$100. Registration should be made at least one month before entrance if possible and should be accompanied by a \$10 deposit. The deposit will apply on the fee and will be refunded if the applicant is unable to take the course. Information may be obtained from the Children's Memorial Hospital, 707 Fullerton Avenue, telephone Diversey 4040.

INDIANA

Personal.—Dr. Robert B. Sanderson, since 1932 superintendent of Healthwin Hospital, near South Bend, has resigned. Dr. Edward W. Custer, assistant medical director of the state tuberculosis sanatorium at Hamburg, Pa., was named his successor, effective August 1.—Dr. Robert E. Jewett, Wabash, has been appointed assistant chief of the bureau of maternal and child health in the state board of health in Indianapolis. Dr. Jewett was formerly in charge of maternal and child health services in the state health department of Maine and recently took a degree in public health at the University of Michigan.—Dr. Wesley M. Hall, Rising Sun, has been appointed to succeed the late Dr. George H. Hansell, Rising Sun, as health commissioner of Ohio County.

IOWA

Interstate Malaria Conference.—The Interstate Malaria Survey, organized in 1939 by health officers and sanitary engineers of the upper Mississippi River basin states in collaboration with the U. S. Public Health Service, held a conference in Davenport on July 23. This group has studied various aspects of the malaria problem and is planning a campaign for the elimination of mosquito-breeding swamps and conditions that permit mosquitos to thrive, it was said. A feature of this year's discussions was consideration of sewage disposal plants. Dr. Walter L. Bierring, Des Moines, health officer of Iowa, is chairman of the group. The states represented are Minnesota, Wisconsin, Illinois, Iowa, Missouri and Indiana.

KANSAS

State Board Election.—Dr. Mirl C. Ruble, Parsons, was elected president of the Kansas State Board of Medical Registration and Examination at its annual meeting in Kansas City, June 17, and Dr. John F. Hassig, Kansas City, was reelected secretary. Other members of the board are Drs. Henry E. Haskins, Kingman; James E. Henshall, Osborne; Chester E. Joss, Topeka; Omar L. Cox, Iola, and Ralph G. Ball, Manhattan.

Society News.—Drs. Charles K. Shofstall and Charles C. Dennie, Kansas City, Mo., addressed the Golden Belt Medical Society, July 10, in Manhattan on "Routine Office Procedure for Treatment of the More Common Pharyngeal and Nasal Conditions" and "Dermatoses in Infants and Children" respectively.—Dr. Vern L. Pauley, Wichita, addressed the Cowley County Medical Society, June 19, in Arkansas City on "Treatment of the Prostate Gland" and Dr. Charles T. Moran, Arkansas City, on "Masking of Symptoms Caused by Sulfanilamide in Mastoid Disease."—Drs. Arthur W. Corbett and David R. Davis, Emporia, discussed appendicitis in adults and children, respectively, before the Lyon County Medical Society in Emporia, July 1.—Drs. Abraham E. Hiebert and Joseph V. Van Cleve, Wichita, addressed the Pratt County Medical Society, June 27, in Pratt on "Burns" and "Diagnosis and Treatment of the Commoner Skin Ailments" respectively.—Drs. Henry N. Tihen and Fred J. McEwen, Wichita, addressed the quarterly meeting of the Southeast Kansas Medical Society in Altamont, June 18, on "Therapy in Gastrointestinal Diseases" and "Cardiac Emergencies and Their Treatment" respectively.—Speakers at a meeting of the Sumner County Medical Society in Wellington, June 19, were Drs. Ray A. West, Wichita, on "Toxemias of Pregnancy" and "The Role of Anesthetics and Analgesics in Obstetrics" respectively.

KENTUCKY

Personal.—Dr. Lenore V. L. Patrick, Williamstown, has resigned as health officer of Grant County to take a position as pediatric consultant to the Wisconsin State Board of Health in Madison.—Dr. Adam Stacy Jr., Pineville, has resigned as health officer of Bell County to enter private practice.—Dr. Joseph Scott Goodpaster, Owingsville, has resigned as health officer of Bath County to enter private practice, and the health unit has been discontinued.

LOUISIANA

Society News.—The Orleans Parish Medical Society was addressed, July 14, by Drs. Gilbert C. Anderson and Noah Leon Hart on "Intracranial Foreign Bodies—Review of Literature, Case Report"; Carlo J. Tripoli and Richard E. Selser, "Newer Developments in the Treatment of Cerebrospinal Fever," and William H. Harris and Herbert J. Schattenberg, "Anlage Tumors of the Lung: Their Protean Histological Patterns in Bronchiogenic Neoplasia."

MICHIGAN

Society News.—Dr. William H. Alexander, Iron Mountain, was named president-elect of the Upper Peninsula Medical Society and Dr. Richard A. Burke, Palmer, became president at the annual meeting in Ironwood, July 17-18.—Dr. Henry Cook, Flint, discussed "Industrial Health and the General Practitioner" before the Muskegon County Medical Society in Muskegon, June 20.

Professor Appointed.—Dr. Ivan B. Taylor, Philadelphia, has been appointed professor of anesthesia at Wayne University College of Medicine, Detroit. Dr. Taylor graduated from

the University of Michigan Medical School, Ann Arbor, in 1932 and later was instructor in anesthesia at the University of Wisconsin Medical School, Madison. Recently he has been anesthetist at the Pennsylvania Hospital, Philadelphia.

Changes in Health Officers.—Dr. Sidney I. Franklin, director of health in Butler County, Ky., has been appointed in charge of the district health unit covering Mackinac and Luce counties with offices in Newberry.—Dr. Otto K. Engelke, Marshall, has been appointed director of the district health unit in Washtenaw County, with offices in Ann Arbor.—Dr. David J. Sobin has been appointed health officer in Carsonville, where he has been practicing medicine.

Dr. Muehlberger to Head State Crime Laboratory.—The Michigan Department of Health has established a crime detection laboratory in cooperation with the Michigan State Police with Clarence W. Muehlberger, Ph.D., Chicago, coronor's toxicologist for Cook County, Ill., as director. The new unit will be in two divisions, one in the health department's bureau of laboratories, where the work in toxicology will be carried on, and the other, a ballistics laboratory, in state police headquarters in East Lansing. In addition to the investigations for the detection of crime, the laboratory will make studies of the causes of occupational diseases in cooperation with the bureau of industrial hygiene. Dr. Muehlberger received the degree of doctor of philosophy at the University of Wisconsin, Madison, in 1923 and was on the faculty of the university from 1920 to 1930. He has been associate professor of pharmacology and toxicology at Northwestern University since 1930 and has also lectured on toxicology at the University of Illinois College of Medicine and the University of Chicago.

MINNESOTA

Personal.—Dr. Ernest M. Kingsbury, Clearwater, has recently been named chief medical officer at the state reformatory at St. Cloud; he will continue his Clearwater practice, maintaining evening office hours there.—Dr. Russell R. Hendrickson, Wabasha, has been named superintendent and medical director at Sand Beach Sanatorium, Lake Park, succeeding Dr. Leon H. Flancher, resigned.—Dr. James Lawrence McLeod, Grand Rapids, took office, July 1, as a district governor of Rotary International.

Faculty Changes at the University.—Dr. Clarence M. Jackson, professor and head of the department of anatomy at the University of Minnesota Medical School, Minneapolis, since 1913, retired at the end of the school year and was made professor emeritus. Dr. Jackson, who first became associated with the school in 1900 as assistant professor of anatomy, became professor in 1902 and head of the department in 1913. In addition he served as dean from 1909 to 1913 and was acting dean of the graduate school in 1917-1918 and in 1925. A committee consisting of Edward A. Boyden, Ph.D., chairman, Andrew T. Rasmussen, Ph.D., and Hal Downcy, Ph.D., has been appointed to administer the department for the coming year. Dr. Horace Newhart, professor of otolaryngology and director of the division of otology, rhinology and laryngology, has resigned to devote his time to private practice and Dr. Lawrence R. Boies, clinical associate professor of ophthalmology and otolaryngology, has been appointed director of the division. Dr. Newhart had been associated with the faculty since 1912. Other retirements were those of Drs. James Frank Corbett as clinical professor of surgery, Walter R. Ramsey as clinical associate professor of pediatrics, Harry P. Ritchie as clinical professor of surgery, Orianna McDaniel as clinical associate professor of preventive medicine and public health, and Anton G. Wethall as clinical assistant professor of urology. Dr. Charles A. Reed, associate professor of orthopedic surgery, also resigned to devote full time to private practice.

MISSOURI

Advisory Committee Named to Recommend Health Appointees.—A representative health and hospital advisory committee was recently appointed by Mayor Becker of St. Louis to obtain recommendations for appointments to major health, hospital and institutional positions, newspapers reported on June 22. Members of the committee include:

Dr. Joseph C. Peden, president, St. Louis Medical Society.
Alphonse M. Schwitalla, S.J., dean of the St. Louis University School of Medicine.
Dr. Frank R. Bradley, superintendent of Barnes Hospital.
Philip A. Shaffer, Ph.D., dean, Washington University School of Medicine.
H. J. Mohler, president, St. Louis Hospital Council.
Dr. Arthur N. Vaughn, president of the National Medical Association.

Society News.—Dr. Stanley F. Hampton, St. Louis, addressed the St. Francois-Iron-Madison-Washington-Reynolds Counties Medical Society in Farmington, June 27, on "Allergy in Relation to General Practice."—The Buchanan County Medical Society was addressed in St. Joseph, June 4, by Drs. James O'Donoghue on "Osteochondritis (Nonsuppurative Epiphysitis)" and Gaylord T. Bloomer, "Treatment for Epiphysitis." Both are of St. Joseph.

NEW YORK

Lake Keuka Meeting.—The summer meeting of the Lake Keuka Medical and Surgical Association was held, July 10-11, at the Keuka Hotel on Lake Keuka. The speakers included:

Dr. Louis Faugeres Bishop Jr., New York, Senile Heart; Observations, Prognosis and Management.
Dr. Lee Adrian, " " Management of Fractures.
Dr. John W. N. " " from a General Practitioner's Point of View.
Dr. James E. King, Buffalo, Pruritus Vulvae.
Dr. Donald Guthrie, Sayre, Pa., Preoperative Care of Toxic Goiter Patient.

Dr. Leon M. Kysor, Hornell, is president of the association, Dr. Noble R. Chambers, Syracuse, vice president and Dr. Virgil H. F. Boeck, Dundee, secretary.

New York City

Hospital News.—The psychiatric service of Lebanon Hospital has been reorganized with Dr. William V. Silverberg in the newly created position of associate in psychiatry and also as chief of the mental hygiene clinic.—Mr. Homer Wickenden, formerly general director of the United Hospital Fund, has been appointed assistant director of the New York Medical College, Flower and Fifth Avenue Hospitals.

Friday Afternoon Lectures.—The Medical Society of the County of Kings has announced its fall series of Friday afternoon lectures. The program for October is as follows:

October 3, Dr. Burrill B. Crohn, The Present Concept of Colitis and Its Management.
October 10, Dr. Alfred H. Iason, Hernia.
October 17, Dr. George A. Sheehan, The Approach to Differential Diagnosis of Medical Conditions.
October 24, Dr. Simon R. Blatteis, Recent Concepts of Rickettsial Diseases: Endemic Typhus, Its Diagnosis and Treatment.
October 31, Dr. Arthur C. DeGraff, Recent Advances in Digitalis Therapy with Particular Attention to the Use of Pure Glycosides.

Postgraduate Courses in Clinical Medicine.—During the coming year Mount Sinai Hospital will present postgraduate courses in clinical medicine in cooperation with Columbia University College of Physicians and Surgeons. One series of part time courses on various topics will be offered from October 27 to December 20. Preceding these October 6 to 10 there will be an intensive full time course on syphilis. A second series will be presented from February 2 to March 28, 1942. In addition three full time courses of four weeks each will be offered in the spring: cardiovascular diseases, April 6 to May 2; gastroenterology, April 6 to May 2, and internal medicine, May 4 to 29. Requests for information should be addressed to the Secretary for Medical Instruction, Mount Sinai Hospital, Fifth Avenue and 100th Street, New York.

Appointments at New York University.—Dr. Colin M. MacLeod, an associate of the Rockefeller Institute for Medical Research, has been appointed professor of bacteriology and director of the bacteriologic laboratories at the New York University College of Medicine. He succeeds Dr. Thomas Francis Jr., who resigned to become professor and head of the department of epidemiology at the new University of Michigan School of Public Health in Ann Arbor. Alwin M. Pappenheimer Jr., Ph.D., assistant professor of biochemistry in bacteriology, University of Pennsylvania School of Medicine, Philadelphia, has been appointed assistant professor of bacteriology. Dr. Frank C. Combes, New Rochelle, associate professor of dermatology and syphilology, has been made full professor, and Dr. James A. Shannon, formerly assistant professor of physiology, has been made assistant professor of medicine and director of the research services on the university's division at the Welfare Hospital for Chronic Diseases.

OHIO

Society News.—Dr. James C. Walker, Dayton, addressed the Greene County Medical Society, Xenia, June 12, on "Treatment of Fractures of the Neck of the Femur."—Dr. Ray W. Kissanc, Columbus, spoke on "Cardiac Contusion" at a meeting of the Marion Academy of Medicine, Marion, in June.—Dr. Edward O. Harper, Cleveland, addressed the Portage County Medical Society, Ravenna, June 19, on "The Hysterias."—Speakers who addressed the Adams County Medical Society, Manchester, June 18, were Drs. Edward S.

Jones, Erie, Pa., on "The Tuberculosis Patient, the Diagnosis, Treatment and Prognosis"; Joseph E. Pirrung and Elmer A. Schlueter, Cincinnati, on "Ulcers and Cancer of the Stomach."

PENNSYLVANIA

Society News.—The Pittsburgh Pediatric Society held a meeting in connection with a "pediatric clinic day" at the Windber Hospital, Windber, June 25. The speakers were Drs. Hyman A. Slesinger, Windber, on "Allergy in Childhood"; Elwood W. Stitzel, Altoona, "Schüller-Christian Disease"; Harold Antiles, Brooklyn, "Undulant Fever" and Paul J. McGuire, Homestead, "Diagnosis of Whooping Cough."

Philadelphia

Personal.—Dr. Alexander J. Steigman, formerly of the staff of the Children's Hospital and the department of pediatrics of the University of Pennsylvania School of Medicine, has left for England to join the American Red Cross-Harvard University Hospital for Infectious Diseases.—Dr. Claude P. Brown, formerly director of the biologic laboratories of the National Drug Company, has been appointed assistant director of the Pennsylvania State Board of Health Laboratories in Philadelphia.

Centennial Celebration of Mental Disease Department.—The department for mental and nervous diseases of the Pennsylvania Hospital held a centennial celebration in June in commemoration of the opening in 1841 of a new building for the mental patients of the hospital. A public meeting and reception were held in the department with addresses by David E. Williams Jr., president of the board of managers; Drs. Lauren H. Smith, physician in chief and administrator; Earl D. Bond, director of research, and Edward A. Strecker, consultant in chief. A medical meeting with papers by the psychiatric staff was also a feature. Pennsylvania Hospital, founded in 1751, is said to have been one of the first hospitals to care for mentally ill patients with the same consideration as shown to the physically ill. Dr. Benjamin Rush, who has been called the "father of American psychiatry," was one of its early physicians in chief.

TENNESSEE

New Health Officers.—Dr. W. D. Burkhalter, associate director of county health work in the state department of health of Alabama, Montgomery, has been appointed health officer of Shelby County with headquarters in Memphis. He succeeds Dr. Robert D. Hollowell, who has gone to St. Petersburg, Fla., as health officer of Pinellas County. Dr. Goldsborough Foard McGinnes, consultant in venereal disease control in the Shelby County health department, has been appointed director of venereal disease control in the state department of health at Nashville.—Dr. Thomas L. Harvey, Newport, health officer of Cocke County, has been transferred to the Dyer-Crockett counties health district with headquarters in Dyersburg. Dr. Luke W. Frame, Ripley, has succeeded Dr. Harvey.—Dr. Arthur K. Husband, Waterbury, Conn., has been appointed health officer of Unicoi County to succeed Dr. Landon H. Gurnee, Erwin, resigned.—Dr. Carl F. Luckey, Jackson, has been appointed health officer of Johnson County in Mountain City.

TEXAS

Allergy Society Reorganized.—The Texas Allergy Association at its annual meeting in Fort Worth in May changed its name to the Southwest Allergy Forum and elected Drs. Homer E. Prince, Houston, president and Simeon H. Hulsey, Fort Worth, secretary. The next meeting will be held in Little Rock, Ark., probably in March 1942.

UTAH

State Medical Election.—Dr. Edwin M. Neher, Salt Lake City, was named president-elect of the Utah State Medical Association at the annual meeting in Salt Lake City, June 11-12, and Dr. John R. Anderson, Springville, became president. Vice presidents elected were Drs. John C. Hubbard, Price; David P. Whitmore, Roosevelt, and Ernest L. Hanson, Logan. The next annual session will be in Provo.

VIRGINIA

Neuropsychiatric Meeting.—Dr. Leo Kanner, Baltimore, was the guest speaker at a meeting of the Neuropsychiatric Society of Virginia in Richmond, June 18, on "Psychotherapy in Children." Other speakers were Drs. Howard R. Masters, Richmond, on "Psychodynamic Aspects of War and Extenu-

ating Crises"; James B. Funkhouser, Marion, "A Description of the Rorschach Experiment," and Oscar B. Darden, Richmond, "Psychoses Among Students Requiring Hospitalization."

Symposium on Industrial Health.—The committee on industrial health of the Medical Society of Virginia and the bureau of industrial hygiene of the state department of health will present the second symposium on industrial health at the Medical College of Virginia, Richmond, September 11-12, with the cooperation of the Virginia Manufacturers' Association and the Richmond Chamber of Commerce. Among addresses scheduled are:

- Dr. William J. McConnell, New York, Respiratory Diseases and Air Conditioning.
- Dr. Louis Schwartz, Bethesda, Md., Diagnosis, Treatment and Prevention of Industrial Dermatoses.
- Donald E. Cummings, B.S., Denver, subject to be announced.
- Dr. Theodore Lyle Hazlett, Pittsburgh, Placement of the Worker.
- Dr. Murray B. Ferderber, Pittsburgh, Selection of Heat in the Treatment of Plant Injuries.

There will be a symposium on industrial ophthalmology presented by Drs. Harry B. Stone, Roanoke; George H. Cross, Chester, Pa.; Rudolph C. Thomason, Richmond, and Charles N. Scott, Nitro, W. Va. Speakers in a symposium on injuries to the hand will be Drs. Sumner L. S. Koch, Chicago; Henry C. Marble, Boston, and Thomas Beath, Richmond. At an evening meeting, September 11, the speakers will be Philip Drinker, C.E., Boston, on "The Significance of Industrial Health in National Defense" and Dr. Edward J. Stieglitz, Garrett Park, Md., "Aging as a Problem of Industrial Health."

WYOMING

State Medical Election.—Dr. George H. Phelps, Cheyenne, was named president-elect of the Wyoming State Medical Society at the annual meeting in Casper. Dr. Lial S. Anderson, Worland, was made vice president and Dr. Marshall C. Keith, Cheyenne, was reelected secretary. The 1942 session will be held in Cheyenne.

GENERAL

Biologic Photographers to Meet.—The eleventh annual meeting of the Biological Photographic Association will be held at the Hotel Buffalo, September 11-13, in Buffalo. The program will emphasize methods and processes that are likely to contribute to national defense, according to an announcement. Visitors are welcome. Further information may be obtained from the Secretary, Biological Photographic Association, University Office, Magee Hospital, Pittsburgh.

Encephalitis Outbreak in Northwest States.—Sixty deaths have occurred in the outbreak of encephalitis that started about July 1 in North Dakota, the Associated Press reported August 7 (*THE JOURNAL*, August 9, p. 465). The disease has spread to South Dakota, from which 3 cases were reported, and Minnesota, in which there were 19, it was said. Dr. James P. Leake of the U. S. Public Health Service, Washington, D. C., and W. L. Jellison, an entomologist on the staff of the Rocky Mountain Laboratory of the public health service at Hamilton, Mont., have gone to Fargo to conduct an investigation.

Birth Rate Shows Upward Trend.—Provisional tabulations of births in 1940 indicate that the trend is upward, as it has been since 1933, the U. S. Bureau of the Census reports. There were 2,353,988 births reported, an increase of 91,260 over the final figure for 1939. The five states with the highest rates were New Mexico with 27.7 per thousand enumerated population, Utah 24.6, Mississippi 24.1, Arizona 23.5 and South Carolina 22.7. The rate for the District of Columbia was 23.1. The five states with the lowest birth rates were New Jersey with 14.1, New York 14.6, Connecticut 14.7, Rhode Island 15.1 and Missouri 15.5.

Society News.—Dr. Ernest M. Seydell, Wichita, Kan., was elected president of the American Otological Society at the annual meeting in May; Dr. Wesley C. Bowers, New York, vice president, and Dr. Isidore Friesner, New York, secretary. —The American Association for the Advancement of Oral Diagnosis will be held in New York, November 13-14, at the New York Academy of Medicine. Members of the medical and dental professions in the United States and countries of the Western Hemisphere who are interested are invited to attend. Programs may be obtained from the secretary, H. Justin Ross, D.D.S., 515 Madison Avenue, New York.

Outbreak of Poliomyelitis Spreads.—Twenty-two new cases of poliomyelitis in the Camp Forrest area of Tennessee were reported, August 10, according to the *Chicago Tribune*. Schools in Moore County, which were to have opened on August 11, were ordered to remain closed until September 1. —There were 125 cases in Alabama on July 25; 44 of the

total were in Birmingham and Jefferson County, the *Birmingham News* reported.—Georgia had 221 cases on July 25, with 65 in Atlanta, according to the *Atlanta Journal*.—Illinois had a total of 72 cases, with 33 in Cook County (including Chicago), the state health officer reported on August 7.—The *New York Times* reported on August 5 that 44 cases had occurred in New Brunswick, Canada, since July 14, with four deaths.

Bequests and Donations.—The following bequests and donations have recently been reported:

- Bryn Mawr Hospital, Bryn Mawr, Pa., \$10,000 from the estate of the late Emily Chapman Philler of Haverford.
- Stuyvesant Square, now the New York Skin and Cancer Hospital, and St. Luke's Hospital and the Hospital for the Ruptured and Crippled, New York, \$153,000 each from the estate of the late Mrs. Esther Hull Tremain of Dobbs Ferry; she also provided remainder interests in two \$50,000 trust funds for the Presbyterian and Roosevelt hospitals.
- Manhattan Eye, Ear and Throat Hospital, \$10,000, and Hospital for the Ruptured and Crippled, \$5,000 by the will of the late George Bliss Agnew. Both are in New York.
- Genesee Hospital, Rochester, N. Y., \$2,000 and three fifths of the residuary estate of the late Mrs. Katharine C. Butts.
- Grace Hospital and Children's Hospital, Detroit, \$5,000 each from the will of the late Dr. George R. Andrews.

Meeting on Neoplastic Diseases.—The annual meeting of the American Association for the Study of Neoplastic Diseases will be held at Garfield Hospital, Washington, D. C., September 4-6. Chairmen for the sessions and topics to be discussed are:

- Dr. Ramsay Spillman, New York, Lesions of Bone.
- Dr. Harry F. Friedman, Boston, Lesions of the Female Genital System.
- Dr. Leopold Clarence Cohn, Baltimore, Lesions of the Breast.
- Dr. Louis Wallace Frank, Louisville, Lesions of the Gastrointestinal Tract.
- Dr. Charles F. Geschickter, Baltimore, Lesions of the Lungs and Respiratory Passages.
- Dr. George Curtis Crump, Asheville, N. C., Lesions of the Lymphoid, Myeloid and Reticuloendothelial Systems.

Friday evening there will be a banquet at the Hotel Mayflower with Dr. John Shelton Horsley, Richmond, Va., as the guest of honor.

China Defense Supplies Commission Appoints Medical Adviser.—Dr. Frank Wang Co-Tui, associate professor of experimental surgery at New York University College of Medicine, New York, has been appointed medical adviser to the China Defense Supplies Commission established by President Roosevelt last April to supervise purchases under the lend-lease program. Dr. Co-Tui will also advise on medical purchases for China made by the American Red Cross and United China Relief. He is vice president of the American Bureau for Medical Aid to China, one of eight agencies now coordinated in United China Relief, which has undertaken to supply all personnel needs, to recruit Chinese physicians living abroad for service in the Chinese Medical Corps, to equip and support the emergency training centers in China for medical aides and to aid the Chinese National Health Administration in its antiepidemic control plan. The medical bureau has opened headquarters at 1790 Broadway, New York, where American physicians and nurses can apply for service in China. One ambulance corps of fifty American, British and Canadian volunteers left on June 23 for service along the Burma Road, with Dr. Robert B. McClure, formerly of Hwaikang, Honan, China, in charge.

Government Services

Identification Tag Shows Blood Type

A new identification tag recently adopted by the U. S. Navy includes in the information it bears each man's blood group and the date on which he received tetanus toxoid.

New Unit for Neuropsychiatric Research

A neuropsychiatric research unit has been established at the Veterans Administration Facility at Northport, L. I., to conduct clinical and laboratory research in connection with neuropsychiatric disabilities among veterans. Dr. James H. Huddleson, recently on the staff of the facility at Portland, Ore., will be the director of the unit and Dr. William J. Turner, recently at North Little Rock, Ark., will supervise the laboratory activities. Technical assistance will include a biochemist, an assistant statistician and laboratory technicians. An effort will be made to standardize diagnostic and therapeutic methods used in the management of neuropsychiatric diseases and the staff will give instruction in modern concepts to medical officers of the Veterans Administration detailed for this purpose, it was said.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 25, 1941.

The Supply of Physicians in Wartime

At a meeting of the General Medical Council the president expressed satisfaction that the government had been alive to the need for maintaining an adequate supply of physicians for civilian as well as for the combatant services. By a new order the government has permitted the council to register temporarily in the colonial or foreign lists physicians from the dominions, colonies, protectorates and allied and enemy European countries provided that they held suitable diplomas and served as medical officers in hospitals or institutions or in some service not involving attendance on patients in their homes. To date two hundred and ninety-four such names had been registered. The credentials of American physicians volunteering in response to Mr. Roosevelt's appeal would be submitted to American bodies for approval. An offer from the Rockefeller Foundation to provide a two years course of free clinical instruction for twenty-five British medical students had been gratefully accepted. The selected candidates would serve as student ambassadors and should bring back interesting reports on medical education in the United States and Canada. Their two years over there would count as part of their curriculum here.

The Treatment of Fractures in the Emergency Hospitals

The emergency hospitals have been organized by the government for the treatment of the accidents sustained by civilians in enemy attacks. The minister of health has reviewed the facilities available for the treatment of fractures with a view to insuring that all patients receive the treatment best suited to their needs and are placed as early as possible under surgeons experienced in their management and in a hospital well equipped to deal with them. As these do not exist in all hospitals, he has decided to designate, in addition to the existing orthopedic centers, three new classes of fracture treatment centers. The first will be designated hospitals which are suitable, from their situation, for cases requiring hospital treatment for a considerable time. They will be under the direction of a surgeon experienced in the treatment of fractures and will provide massage, electrotherapy, remedial exercises and occupational therapy. The second class designated will have similar facilities but, from their position, not be suitable for long stay cases. They will be designated fracture departments for ambulant and short stay cases. The third class will provide special clinics suitably situated for outpatient treatment within reach of the patients' homes after discharge from the hospitals of the previous classes which are not so situated.

Work at the London School of Tropical Medicine

The war has seriously affected the work of the London School of Tropical Medicine, but programs of research have been carried out as well as a limited amount of teaching, and short intensive courses have been given for those about to undertake service in the tropics. The department of clinical tropical medicine suffered a serious loss when the Hospital for Tropical Diseases was closed on the outbreak of war, but as a temporary measure ten beds have been allocated at the Dreadnought Hospital, Greenwich, for cases of the type which used to be admitted to the Hospital for Tropical Diseases. But the Dreadnought Hospital has since been damaged by enemy action, so that other provisions for the teaching of clinical medicine have had to be made. The department of parasitology has been transferred to a town a short distance

from London, where an investigation on subclinical helminthiasis in Great Britain is being continued, as well as other studies. Investigations on lice have occupied the department of entomology, and the use of modern insecticides has been carefully examined. In the public health department the behavior of the skin, especially in relation to the effects of clothing, has been studied.

Fresh Liver for Pernicious Anemia

Owing to the present shortage of supplies of raw liver, the Food Rationing Advisory Committee of the Medical Research Council was asked by the Ministry of Food to advise as to the need for special rations of fresh liver for the treatment of pernicious anemia. The committee advised that fresh liver is not necessary except in those rare cases in which parenteral injection of liver extract produces anaphylactic shock. The Ministry of Food has accordingly made no provisions for allowing extra rations of fresh liver in pernicious anemia in general but has arranged that on the production of a medical certificate that liver extract parenterally produces anaphylactic shock such rations may be obtained for particular patients. The advice of the committee is based on the following considerations: The treatment of pernicious anemia by parenteral liver extract is more efficient than that by ingestion of raw or lightly cooked liver; it is the cheapest method; under present conditions a continued supply of fresh liver cannot be guaranteed.

The treatment of pernicious anemia, says the committee, cannot be considered satisfactory unless the red corpuscles are maintained at 5 millions per cubic millimeter and the hemoglobin at 100 per cent. At lower figures the patient may feel well but there is danger of subacute degeneration of the cord developing. While the necessary values may be maintained by ingestion of fresh liver, the amounts required are such that few patients will take them indefinitely. On the other hand, intramuscular injections of 1 or 2 cc. of liver extract at intervals of seldom less than one or two weeks are sufficient.

The committee does not advise either the liquid or the powder preparations of liver designed for oral administration. Its reason is that, though efficacious, these preparations are uneconomical of the supply of raw liver available. About fifty times as much liver is required to produce a single dose as for parenteral administration. This objection does not apply to oral preparations made from the stomach.

Mr. Winston Churchill, F.R.S.

The fellowship of the Royal Society (F.R.S.) is the highest scientific distinction in this country and as a rule is conferred only on those who have done original scientific work of importance. The unusual ceremony has taken place of conferring the distinction on a man who is not a scientist but the value of whose work for the country cannot be exaggerated. At the cabinet room of the government, the president of the Royal Society, Sir Henry Dale, who has qualified as a physician and is an eminent biochemist, conferred the F.R.S. on the prime minister, Mr. Winston Churchill. Among the secretaries of the society present was the physiologist Prof. A. V. Hill, who is biologic secretary. After signing his name in the ancient charter book Mr. Churchill was shown the signature of his ancestor Sir Winston Churchill, father of the great duke of Marlborough, who was admitted an early fellow of the society in 1664.

Biochemist to Study the Food of the Air Force

The government has appointed a biochemist, Dr. T. F. Maeræ, and a specialist medical officer, squadron leader W. P. Stamm, to watch over the food supplies of the air force to insure that the greatest nutritional value is obtained. The biochemist will analyze the foods and experiment to discover the existence and extent of any deficiency in vitamins, min-

erals, salts, proteins, carbohydrates or fats. The specialist medical officer will watch for the earliest signs of food deficiency in the health of the men. Both will study the preparation and cooking of food at the various units, the planning of a balance ration from the available supplies and the prevention of waste.

Dr. Macrae has done much organic chemical research since graduating in 1927. After working in Glasgow for two years he undertook biochemical research at Munich University under Professor Wieland and later at the Lister Institute and the London Hospital. He has performed experiments and published reports of researches on food, yeast, bread, potatoes and the fattening of pigs.

Celebration of an One Hundred and Eleventh Birthday

Mr. Patrick Lucas Hamilton, an Irishman who lives at Pleasant Point, 12 miles from Timaru, New Zealand, has celebrated his one hundred and eleventh birthday, states Reuter. In honor of the occasion he sat for three hours in an easy chair, which his family had presented to him on his hundredth birthday. He was born in County Donegal and came to New Zealand in 1870.

BUENOS AIRES

(From Our Regular Correspondent)

May 29, 1941.

Adolescent Health in Buenos Aires

Prof. Florencio Bazán and Dr. G. Bayley Bustamante, pediatricians officially connected with the division of school hygiene of the national health department in Buenos Aires, recently prepared a report of investigations made by their division into the health condition of school youths at the age level of 12 to 18 years. Of the 27,000 examined during the first quarter of 1940, 3,500 were about 18 years old, 22,000 were 12 years old or somewhat older and only 1,200 were under 12 years of age. Accordingly, the statistics submitted in this report cover youths between incipient puberty and the termination of the growth period.

In general, 10.47 per cent of the 27,000 children presented an anomaly of some kind. This does not include dental caries, which was found in 34 per cent of the children. Twenty-eight per cent of the younger children in this survey showed some infection exclusive of infections of the eyes (15 to 21 per cent) and ears (5 to 8 per cent). Since the latter infections were included in the studies for the older children, it demonstrated that the pathologic index of the older children was six times lower than that of the younger.

In the health analysis of the older children a good general condition was found in 26,000 (96.07 per cent). In 1,000 (3.89 per cent) a lower health index was seen consisting in serious chronic nutritional disturbances but without definite sequels, congenital defects or other defects associated with partial deficiencies. In 10 (0.04 per cent) poor general health was observed, such as chronic disorders with general deficiencies, cardiopathies or tuberculosis. An unsatisfactory nutritional status was seen in a small number of cases (0.45 per cent). (Statistics covering 500,000 elementary school children showed nutritional impairment in 2.93 per cent.) Overnutrition in the sense of uncomplicated obesity was observed in 1.29 per cent and may be due to the metabolic changes in early puberty. Endocrine dysfunction was seen in 195 cases of adipositas hypogenitalis, in 5 cases of gynecomastia, in 3 of infantilism (Lorain type), in 3 of hyperthyroidism, in 1 case of exophthalmic goiter and in 1 case of hypoplasia genitalis. Atypical cases are not included in these figures. The disease index noted in these disorders (0.77 per cent) was much higher than that of elementary school children (0.05 per cent), owing to the greater age and development of the former. The circulatory disturbances observed were valvular involvements and amounted to only 0.2 per cent. These figures are based on clinical evaluation.

Electrocardiographic and roentgenologic methods would probably indicate a greater involvement. Only 30 cases of respiratory diseases were noted. However, common acute processes were not counted and no roentgenologic examinations were made. Nervous diseases were found in only 0.11 per cent, cutaneous diseases in 0.38 per cent (in elementary school children the rate was 1.76 per cent). Among otorhinolaryngologic diseases, hypertrophy of the tonsils and adenoids were as low as 0.52 per cent compared with a 9.57 per cent in children of elementary school age. The reduction is attributed to spontaneous regression or to medical care. Ocular disturbances were found in 5.36 per cent compared with a three times greater incidence in elementary children, the result, no doubt, of corrective measures taken. External deformities such as congenital malformation, hernia, scoliosis and flat foot amounted to 0.48 per cent; urogenital disturbances to 0.58 per cent, including 82 cases of testicular ectopy and 71 cases of varicocele.

The functions of the division of school hygiene consist not only in diagnosis and statistical surveys but in taking measures for early treatment. That public health studies are valuable can be gathered from the statistics furnished by the ministry of war regarding the fitness of examined recruits. In 1928 military unfitness amounted to 25.3 per cent. It rose to 42.1 per cent in 1939. The causes of unfitness assigned in 1939 in a report on 12,893 recruits of the first division (Buenos Aires, the capital) were insufficient body size 126, insufficient weight 366, insufficient chest index 3, constitutional weaknesses 1,527, nutritional and metabolic disorders 68, endocrine dysfunction 10, respiratory disorders 60, digestive disorders 1,613, circulatory disorders 150, urogenital disturbances 116, cutaneous disturbances 356, auditory disturbances 58, ophthalmologic disturbances 315, nervous disturbances 54, disturbances of hemopoietic organs 5, allergies and poisoning 10, infectious diseases 4, tuberculosis 44, congenital malformation, dystrophias, deformation and mutilation 997, traumas 94 and tumors 6. These conditions were found in 6,175 (47.1 per cent) of the 12,893 recruits.

Marriages

CHARLES GARDNER CHILD 3d, New York, to Miss Margaret McCrae Austin of Upper Montclair, N. J., June 14.

THOMAS GARDINER THURSTON, 2d, Taylorsville, N. C., to Miss Susan Rankin Fountain of Rocky Mount, June 10.

JAMES ANDRE LAMPHIER, Newton, Mass., to Miss Anne Fischer Nosworthy of Bronxville, N. Y., June 21.

WILLIAM HENRY BREEDEN, Bennettsville, S. C., to Miss Mary Fowler Robinson of Sand Spring, Md., in June.

WILLIAM TALIAFERRO THOMPSON JR. to Miss Jessie Gresham Baker, both of Richmond, Va., June 21.

EARL J. HOUGHTON to Miss Genevieve Fleishman, both of Davenport, Iowa, in Iowa City, June 25.

LONDON H. GURNEE, Erwin, Tenn., to Miss Doris Eakin of Lexington, Miss., in Memphis, June 8.

EDWARD HUGER ROBERTS, Choctolocco, Ala., to Miss Katherine Hall of Chicago, July 16.

LOUIS IACUEO, New York, to Miss Anne Victoria Spica of Mount Vernon, N. Y., June 10.

CHARLES HUGH MAGUIRE to Miss Sherley Chapman Jenkins, both of Louisville, Ky., July 2.

DAVID FERTIG, Hartsdale, N. Y., to Miss Catherine Campbell of White Plains, March 19.

JOHN HENRY BORN to Miss Eleanor Frederica Lehrfeld, both of New York, June 14.

WILLIAM F. KUBICEK, Cleveland, to Miss Lorell Watne of Nokomis, Ill., in June.

VIOLET GRAY HALFPENNY, Fairfield, Ala., to Mr. Lew Chauncey Wallace, June 14.

ROBERT J. HALEY JR. to Miss Ethel Brewer, both of Paragould, Ark., in June.

CHARLES PAINE JR. to Miss Mary Halbrook, both of Atlanta, Ga., in June.

Deaths

Walter Carl Klotz ☉ New York; Columbia University College of Physicians and Surgeons, New York, 1898; assistant professor of public health and preventive medicine at the Cornell University Medical College; at one time associate professor of phthisiology at the University of Virginia Department of Medicine, Charlottesville, and instructor in medicine at the University of California Medical Department, Los Angeles; member of the American Clinical and Climatological Association; at various times medical director of the Vermont Sanatorium, Pittsford, Blue Ridge Sanatorium, Charlottesville, Va., and the Johnson City (Tenn.) National Sanatorium; formerly physician in charge of the Barlow Sanatorium, Los Angeles; served as associate medical director of the commission for tuberculosis in France, 1918-1919; for many years director of the outpatient department of New York Hospital; aged 65; died, June 29.

Elmore B. Tauber ☉ Cincinnati; Medical College of Ohio, Cincinnati, 1902; chairman of the Section on Dermatology and Syphilology of the American Medical Association, 1930-1931; professor of dermatology and syphilology at the University of Cincinnati College of Medicine; member of the American Dermatological Association, American Academy of Dermatology and Syphilology, Pan American Dermatological Society, tenth International Dermatological Congress, Society for Investigative Dermatology, Mississippi Valley Dermatological Society and the Central States Dermatological Society; on the staffs of the Cincinnati General Hospital, Jewish Hospital, Children's Hospital and the Holmes Hospital; aged 62; died, June 23, of a streptococcal infection.

James Ely Talley, Lima, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1892; emeritus professor of cardiology at the University of Pennsylvania Graduate School of Medicine; fellow of the American College of Physicians; served in the navy during the World War; one of the founders and past president of the Philadelphia Heart Association; one of the founders, for many years on the staff and a member of the board of directors of the Babies' Hospital, Philadelphia; member of the board of governors of the Children's Heart Hospital, Philadelphia; consulting physician on the staff of the Presbyterian Hospital and the Woman's Hospital, Philadelphia; aged 76; died, July 3, of arterial cerebral thrombosis.

John P. Fletcher, ☉ Lieutenant Colonel, U. S. Army, retired, Carlisle, Pa.; University of Virginia Department of Medicine, Charlottesville, 1908; entered the medical corps of the United States Army as a first lieutenant in 1910, in 1913 was appointed a captain, a major in 1917 and retired with rank of lieutenant colonel June 22, 1930 for disability in line of duty; was in active duty from June 23, 1930 to Oct. 31, 1930; fellow of the American College of Surgeons; served during the World War; aged 56; died, May 10, of uremia.

Charles Lloyd Connor ☉ San Francisco; Baylor University College of Medicine, Dallas, Texas, 1920; professor of pathology at the University of California Medical School; instructor of pathology at the Harvard Medical School, Boston, in 1925; member of the American Association of Pathologists and Bacteriologists and the American Society for Experimental Pathology; on the staff of the University of California Hospital; aged 49; died, June 12, of coronary arteriosclerosis.

George Flanders Wilson, Portland, Ore.; University of Virginia Department of Medicine, Charlottesville, 1879; University of the City of New York Medical Department, New York, 1880; emeritus professor of surgery at the University of Oregon Medical School; for many years on the staff of the Good Samaritan Hospital; aged 82; died, June 27, of hemiplegia resulting from hypertension.

James Alexander Craig ☉ Gary, Ind.; University of Maryland School of Medicine, Baltimore, 1908; fellow of the American College of Surgeons; served during the World War; attending surgeon, Methodist and St. Mary's Mercy hospitals, and Lake County Tuberculosis Sanitarium, Crown Point; formerly member of the school board; aged 61; died, July 2, of mitral regurgitation.

William Ernest Ramsay, Perth Amboy, N. J.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1888; member of the Medical Society of New Jersey; formerly health officer; at one time state senator; for many years on the staff of the Perth Amboy Hospital; aged 74; died, June 26, of chronic myocarditis and coronary embolism.

William Tell Oppenheimer ☉ Richmond, Va.; Medical College of Virginia, Richmond, 1881; University of the City of New York Medical Department, 1882; fellow of the American College of Surgeons; past president of the Richmond Academy of Medicine; past president of the city board of health; aged 80; died, June 11, of cardiorenal disease.

Alfred William MacPherson ☉ Los Angeles; College of Medical Evangelists, Los Angeles, 1929; member of the Nevada State Medical Association; assistant professor of anesthesiology at his alma mater; on the staff of the White Memorial Hospital; aged 39; died, June 18, following an operation on adhesions, causing chronic obstruction.

Eugene Augustus Vickery ☉ Medical Inspector, Commander, United States Navy, retired, Boston; Harvard Medical School, Boston, 1903; fellow of the American College of Surgeons; entered the navy in 1904 and retired in 1930 for incapacity resulting from an incident of service; aged 62; died, June 22, of coronary thrombosis.

Charles Leo McCrossan, Somerville, Mass.; Harvard Medical School, Boston, 1910; member of the Massachusetts Medical Society and the New England Obstetrical and Gynecological Society; member of the board of health; on the staff of the Somerville Hospital; aged 54; died, June 26, of chronic myocarditis.

Elwood D. Wilson, Jackson, Mich.; Michigan College of Medicine and Surgery, Detroit 1897; member of the Michigan State Medical Society; aged 70; died, June 19, in the Addison Community Hospital of burns received when wires on a pole he was helping to erect in a hay field came in contact with power lines.

William Joseph Lynch, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1909; member of the Medical Society of the State of Pennsylvania; served during the World War; aged 53; died, June 24, in the Holy Name Hospital, Teaneck, N. J., of adenocarcinoma of the stomach.

Dennis Matthew Ryan, Ware, Mass.; University of Vermont College of Medicine, Burlington, 1884; member of the Massachusetts Medical Society; for many years member of the school committee; on the staff of the Mary Lane Hospital; aged 80; died, June 14, of coronary disease.

Amos Morris Peters ☉ Alexandria, La.; University of Nashville (Tenn.) Medical Department, 1902; served during the World War; at one time parish coroner; aged 63; formerly on the staff of the Baptist Hospital, where he died, June 19, of pyelitis and pneumonia.

William Moore Woodward ☉ McKeesport, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1891; past president of the McKeesport Academy of Medicine; on the staff of the McKeesport Hospital; aged 75; died, June 17, of chronic myocarditis.

Domenico Carantonio Mauro ☉ Mechanicville, N. Y.; Albany (N. Y.) Medical College, 1912; member of the board of education; aged 52; on the staffs of the Troy Hospital and the Leonard Hospital, where he died, June 14, following an operation for appendicitis.

Joseph J. Cobb, Berlin, N. H.; Medical School of Maine, Portland, 1881; member and past president of the New Hampshire Medical Society; formerly member of the board of education; for many years on the staff of St. Louis Hospital; aged 88; died, July 15.

Clarence Leonard Olson, McIntosh, S. D.; State University of Iowa College of Medicine, Iowa City, 1908; member of the South Dakota State Medical Association; aged 59; died, June 5, at the University Hospital, Minneapolis, of coronary sclerosis.

Howard Messner Ripley ☉ Kenosha, Wis.; Hahnemann Medical College and Hospital, Chicago, 1917; served during the World War; on the staffs of the Kenosha and St. Catherine's hospitals; aged 46; died, June 18, of coronary thrombosis.

Julius A. Klabs, Depew, N. Y.; Detroit College of Medicine, 1906; for many years health officer and school physician; aged 58; died, June 9, in the Buffalo General Hospital of *pneumophagus vulgaris*, bronchopneumonia, cystitis and septic splenitis.

Albert Prince Weaver, Philadelphia; Jefferson Medical College of Philadelphia, 1892; member of the Medical Society of the State of Pennsylvania; aged 82; died, June 26, in the Presbyterian Hospital, of arteriosclerosis and heart disease.

Harry S. Swope, Ashland, Ky.; Louisville Medical College, 1898; member of the Kentucky State Medical Association; past president of the Boyd County Medical Society; formerly county coroner; aged 65; died, June 23, of coronary occlusion.

Alexander Joseph Verdon, Ridgefield, N. J.; St. Louis University School of Medicine, 1934; police and school surgeon; aged 34; died, June 19, in St. Mary's Hospital, Hoboken, of diverticulitis of the sigmoid and intestinal obstruction.

Charles R. Russell, Des Moines, Iowa; Keokuk Medical College, 1898; member of the Iowa State Medical Society; formerly secretary of the Van Buren County Medical Society; aged 70; died, June 21, of cardiac decompensation.

Garrett Van der Veer Johnson, Lake City, Fla.; Albany (N. Y.) Medical College, 1896; veteran of the Spanish-American War; on the staff of the Veterans Administration Facility; aged 63; died, June 10, of coronary occlusion.

Tyrus Eugene Swan, Easton, Pa.; Kentucky School of Medicine, Louisville, 1889; past president of the Northampton County Medical Society; on the staff of the Easton Hospital; aged 79; died, May 28, of carcinoma of the nose.

Murray Lincoln Kaplun, New York; Hessische Ludwigs-Universität Medizinische Fakultät, Giessen, Hesse, Germany, 1923; served during the World War; aged 46; died, June 24, in the Memorial Hospital, of Hodgkins disease.

Andrew Jackson Heflin, Oberlin, La.; University of Nashville (Tenn.) Medical Department, 1906; member of the Louisiana State Medical Society; for many years parish coroner; aged 65; died, June 14, of coronary thrombosis.

Ralph Sumner Martin, Fredericktown, Pa.; University of Pittsburgh School of Medicine, 1912; aged 55; died, June 24, in the Hillview Sanitarium, Washington, of cerebral arteriosclerosis and acute adhesive pericarditis.

Anthony Kimmel Warner, Chicago; University of Maryland School of Medicine, Baltimore, 1885; on the staff of the American Hospital; aged 77; died, June 27, of cerebral hemorrhage and arteriosclerosis.

Percy Burdell Long, Copley, Ohio; Ohio Medical University, Columbus, 1898; member of the Ohio State Medical Association; served during the World War; aged 67; died, June 14, of cerebral hemorrhage.

Max Sonkin, New York; University and Bellevue Hospital Medical College, New York, 1917; member of the Medical Society of the State of New York; aged 47; died, June 13, of coronary thrombosis.

Sylvester Newton Mayberry, Enid, Okla.; St. Louis College of Physicians and Surgeons, 1893; president of the University Hospital Foundation; aged 73; died, June 22, of coronary embolism.

R. Berney McNeill, Jemison, Ala.; Memphis (Tenn.) Hospital Medical College, 1898; member of the Medical Association of the State of Alabama; aged 68; died, June 23, of angina pectoris.

Addison G. Swaney, Lees Summit, Mo.; University Medical College of Kansas City, Mo., 1906; formerly deputy coroner of Jackson County; aged 59; died, June 3, of hypertension and nephritis.

Harry Patrick Hall, Atlantic, Iowa; Drake University Medical Department, Des Moines, 1894; member of the Iowa State Medical Society; aged 69; died, June 24, of cerebral hemorrhage.

Luckey Andrew Jenkins, Birmingham, Ala.; Medical College of Alabama, Mobile, 1889; member of the Medical Association of the State of Alabama; aged 75; died, June 22, of myocarditis.

Ivan Dimiter Mishoff, Milwaukee; Rush Medical College, Chicago, 1889; an Affiliate Fellow of the American Medical Association; aged 83; died, June 20, of coronary thrombosis.

John Edward McGinnis, Green Bay, Wis.; Rush Medical College, Chicago, 1900; served during the World War; aged 69; died, June 12, in the Veterans Administration Facility, Hines, Ill.

Herbert E. Purcell, Charleston, S. C.; Howard University College of Medicine, Washington, D. C., 1894; aged 74; died, June 21, of cerebral hemorrhage, hypertension and arteriosclerosis.

Lavinia Dunn Lambert, Oakland, Calif.; University of Michigan Homeopathic Medical School, Ann Arbor, 1881; aged 93; died, June 22, of bronchopneumonia and mitral regurgitation.

Ambrose M. Mayfield, Montmorenci, Ind.; Kentucky School of Medicine, Louisville, 1894; aged 70; died, June 25, in St. Elizabeth Hospital, Lafayette, of coronary occlusion.

Clymer Defoor Jeffries, Williams, Ariz.; Atlanta (Ga.) College of Physicians and Surgeons, 1902; aged 60; died, June 22, in the Mercy Hospital, Flagstaff, of pulmonary edema.

Hugh McCulloh Sr., West Point, Ga.; Atlanta Medical College, 1895; member of the Medical Association of the State of Alabama; aged 67; died, June 16, of angina pectoris.

Richard McCord Hoffman, Orkney Springs, Va.; University of Virginia Department of Medicine, Charlottesville, 1907; aged 61, died, June 17, of coronary thrombosis.

Robert S. Linn, Detroit; Michigan College of Medicine and Surgery, Detroit, 1891; served during the Spanish-American War; aged 71; died, June 18, of cerebral hemorrhage.

Orville William Kimbell, Toledo, Ohio; Toledo Medical College, 1897; member of the Ohio State Medical Association; aged 68; died, June 9, of cerebral hemorrhage.

Alvah Vernon Mills, Newark, N. J.; University of Vermont College of Medicine, Burlington, 1905; aged 59; died, June 24, in Little Falls of coronary sclerosis.

David A. Yates, Avant, Okla.; Ensworth Medical College, St. Joseph, Mo., 1900; aged 62; died, April 2, of an embolus following an operation on the gallbladder.

William Henry Syme, Washington, D. C.; George Washington University School of Medicine, Washington, 1904; aged 70; died, June 6, in Hendersonville, N. C.

Charles H. Payette, Duluth, Minn.; Hospital College of Medicine, Louisville, Ky., 1898; aged 76; died, June 11, in St. Mary's Hospital, of bronchopneumonia.

Henry Sanford Liddle, Schenectady, N. Y.; Hahnemann Medical College and Hospital of Philadelphia, 1897; aged 70; died, June 28, of coronary disease.

J. Frank Williams, Roebuck, S. C.; Southern Medical College, Atlanta, Ga., 1888; aged 75; died, June 10, of bronchopneumonia and pulmonary emboli.

Nils Gabriel Rosen, Brooklyn; University and Bellevue Hospital Medical College, New York, 1918; aged 61; died, June 21, of cerebral hemorrhage.

Ellwood Matlack, Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1886; aged 75; died, June 12, in Johnsville, Pa.

William B. May, Menands, N. Y.; University of Buffalo School of Medicine, 1896; aged 83; died, June 28, of coronary occlusion and arteriosclerosis.

Raymond B. Nutter, Enterprise, W. Va.; Louisville (Ky.) Medical College, 1905; aged 62; died, June 20, of carcinoma of the pancreas.

Edgar C. Hutchins, Greenville, Texas (licensed in Texas by years of practice); aged 63; died, June 21, of cerebral hemorrhage and pneumonia.

Percy Edwin Lilly, Kilmarnock, Va.; University of Maryland School of Medicine, Baltimore, 1901; aged 63; died, June 15, of angina pectoris.

Thomas B. Kerley, Simpson, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1888; aged 76; died, June 27, of cerebral hemorrhage.

Perry K. Pratt, St. Joseph, Mich.; American Medical College, St. Louis, 1893; aged 74; died, June 12, of cerebral hemorrhage.

Joseph Edmond Le Sage, Montreal, Que., Canada; Laval University Faculty of Medicine, Quebec, 1895; aged 69; died, June 25.

Margaret H. Lister, Winfield, Kan.; John A. Creighton Medical College, Omaha, 1911; aged 67; died, June 12, of heart disease.

Matthew Alvin Lenton, Vineland, N. J.; Kentucky School of Medicine, 1904; aged 80; died, June 30, of arteriosclerosis.

Lyda McKendree, Bowling Green, Ohio; Toledo Medical College, 1892; aged 83; died, June 15, of arteriosclerosis.

Hugh R. Jeffrey, Morristown, Ohio; College of Physicians and Surgeons, Baltimore, 1893; aged 72; died, June 10.

Robert Hutchinson, Capron, Ill.; Rush Medical College, Chicago, 1876; aged 90; died, June 8, of pneumonia.

Thomas Herbert Sneath, Durham, Ont., Canada; Trinity Medical College, Toronto, 1895; died, May 27.

John Wesley Clubb, Blanford, Ind.; Louisville (Ky.) Medical College, 1884; aged 77; died, June 30.

Aldora J. Tyler, Clinton, Ill.; Woman's Medical College, Chicago, 1885; aged 79; died, June 7.

Josiah L. Barge, Gretna, La.; Atlanta (Ga.) Medical College, 1887; aged 82; died, May 22.

John S. Murphy, Sullivan, Ind.; (licensed in Indiana in 1897); aged 85; died in June.

Bureau of Investigation

SOME MISCELLANEOUS FRAUD ORDERS

United States Post Office Closes the Mails to Certain Medical Fakes

Fraud orders issued by the Post Office Department have frequently been the subject of extensive articles by the Bureau of Investigation in these pages of THE JOURNAL. Following are brief abstracts of some Fraud Orders not dealt with previously:

Alberta Studios—How to learn the secret formula for "pep" at the cost of a dime was the alluring promise held out by these "Studios," run by one A C Brckman of Buffalo. If one sent the dime he learned that "the secret" was simple "Natural Oats." In case the customer did not recognize the substance, he was told that it was "the kind of oats horses get," and further, "the reason horses are given oats is to make them PEPPY." If one needed further convincing, he was told that "the natural goodness in oats has given me EXTRA PEP—I am sure it will give you that PEPPY FEELING, the same as myself and as horses." If one wanted to feel as peppy as Mr. Bachman or as horses, he was told to "take a ½ gallon of NATURAL OATS, soak in 2 gallons of distilled water 44 hours bring to a boil not more than 10 minutes, keep covered while boiling, cool, strain, pressing excess from oats, put in bottles and keep corked." Finally he was told that if he would drink a wineglassful (presumably of the expressed liquid) after each meal and keep up the good work "for a week or two" he would "see the different PEPPY person" the stuff had made of him. But the skeptical Post Office Department consulted expert medical authorities, who pointed out that following the directions for taking this "oat brew" would provide the taker with only about 20 units of vitamin B₁ daily, whereas an adult requires about 250 units daily, and that the only minerals in natural oats whose absence from the diet is likely to cause mineral deficiency disorders are those which are not water soluble, consequently this "oat brew," from which the directions require the straining of all pulp, would not furnish the user with any therapeutically significant amounts of the important minerals. It was further shown that loss of "pep" may be due to many conditions on which the use of this "oat brew" would have no effect whatever. Brckman also sold a booklet, "Whatever You Desire Can Be Yours," which all inclusive promise was obviously impossible of fulfillment. Altogether his schemes were found to justify the issuing of a fraud order against his business, and this was done on Oct 14, 1940.

Allen Health Food Company—This concern, located at Keansburg, N J, had an A W Caskey as manager. It did business by mail, selling "Enerjol" for the restoration of lost youthful vigor. Caskey was found to be an electrician without medical training, yet he promoted his "cure" as "A NEW SCIENTIFIC DISCOVERY OF A VITAMIN WHICH IS CALLED THE 'ANTISTERILITY VITAMIN,'" adding that "it comes under the head of Vitamin E, and has to do with fertility, youthful vigor, and all the other desirable things we mortals covet!" Government chemists reported that Enerjol consisted of small globular capsules or "perles" containing vitamin E in the form of wheat germ oil. Expert witnesses testified at the government hearing that the amount of vitamin E was too small to remedy a deficiency thereof. Also they pointed out that neither vitamin E nor any other treatment will correct all cases of sterility or sexual decline. On Aug 15, 1940 the Post Office banned this business from the mails on the ground that it was fraudulent.

Anatone Company—This New York concern used the mails to sell "Anatone" under what the Post Office Department declared were false and fraudulent representations that it would completely overcome all forms of constipation, prevent the recurrence thereof (except where there is "another" alleged "unbalancing of normal routine") and produce "normal, natural" bowel movements, and that the product is different from ordinary methods of treating constipation, does not involve the use of drugs and produces no injurious effects. Government chemists reported that Anatone was a colorless, sticky material to be inserted into the rectum by means of a nozzle tube and that it consisted essentially of water, glycerin, boric acid and small amounts of gelatin and a gum. Expert medical testimony was produced to show that such a mixture and method will not bring about a natural bowel evacuation or eliminate the basic causes of constipation. Hence it would not and could not offset improper dietary, lack of exercise, deleterious hygienic conditions, abnormal nervous or glandular states, the use of opiates and other factors in constipation. Further, despite the promoters' claims to the contrary, Anatone did contain drugs, did act as a cathartic, would irritate the lower bowel and its use could be harmful and in some cases dangerous. As its sale was held to be a fraudulent means of obtaining money through the mails, a fraud order was issued against the Anatone Company, Anatone Company Production Department and their officers and agents as such on Dec 18, 1939.

Harris Research Bureau—This Phoenix, Ariz., concern was run by a P C Harris who sold through the mails the alleged answers to 650 questions, representing that his replies were valuable and correct. These "650 opportunities for employment and financial independence" were obtainable for \$1. The customer was told that he could, in turn, go into the business of selling the answers to other customers, making 75 cents on each deal and paying the Harris concern 25 cents. The Post Office investigation disclosed that the Harris circulars contained a long jumbled list of questions on unrelated subjects under several headings which were allegedly answered in the material supplied to customers. Under the heading "How to do These Things" were listed such subjects as "Get Sleep," "Remove Warts," "Help Babies Sleep" and "Remove Surplus Fat." Under the heading "How to Make" were "Small Pox Remedy," "Hair Oil," "Freckle Lotions," "Eczema Ointment," "Psoriasis Remedy," "For Tooth Decay Prevention," "Remedy for Baldness," "Itch or Ringworm Remedy," "Treat Sugar Diabetes" and some other things. Another title, "How To

Do These Things," covered such subjects as "Grip Flesh," "For Arthritis," "For Pellagra," "Stop Hiccoughs," "For Athletic Feet," "For High Blood Pressure" and "How To Prevent Headaches." The Post Office found that careful examination of the questions and answers disclosed that for the most part the replies were valueless, unreliable and in a considerable number of instances false. Particularly false, according to the expert testimony of a physician at the hearing of the case, were the answers furnished to the large number of medical questions propounded and did not afford customers proper information for treating the various disorders involved. It was further emphasized that in many of the diseases mentioned self treatment would be dangerous and might even result in loss of life. In some cases the advice given was utterly ridiculous. The patient with appendicitis, for instance, was told to "stand on head so poison runs out of appendix." Such worthless "information" as this and some other replies was held to defraud the customers and consequently the Harris Research Bureau was debarred from the mails by a Post Office fraud order issued on Oct 23, 1940.

Lanac Chemical Company—On July 25, 1940 the Post Office debarred this Chicago concern from the mails on the ground that its "Lanac Compound" was being sold through that means under fraudulent pretenses, representations and promises as a remedy for varicose ulcers and "terrible sores" on the body. Government chemists reported that it was a dark brown ointment containing balsam of Peru, ichthammol and about 8 per cent of bismuth (as oxygallate), with a slight vanilla odor. Expert medical testimony showed that this mixture would have little value in treating chronic leg sores, especially those caused or complicated by varicose veins. The concern neither put up any defense nor sent a representative to the hearing. Another government agency, the Federal Trade Commission, reported in February 1938 that it had prevailed on the Lanac Chemical Company, Chicago, trading under the name Dr. Latham Chemical Company, to promise to drop the term "Dr" in its name, implying that a licensed physician was associated with the business, and to cease representing that the ointment was a competent treatment and cure for varicose ulcers and had been used in a prominent clinic.

Philipp Wong—From Cambridge, Mass., this person, a Chinese, sold by mail a product that he called "Soft Corns Valuable" and promoted it as a cure for corns and skin diseases, including even such serious ones as psoriasis, cancer and those resulting from syphilis. In his come on literature Wong quickly claimed to "guarantee all kinds corns CURE." Those up to five years growth could be "cured" for \$2 and those over ten and up to thirty years development would require \$25 worth of the treatment. Besides, "35 years old skin trouble don't cost so much"—but just how much, was not stated—and Wong promised it would be gone in six months. Another misrepresentation was that the nostrum had been recognized by the United States government. Federal chemists reported that it consisted essentially of sulfides of sodium, iron and copper. On Feb 2, 1940 the Post Office Department debarred the scheme from the mails on the ground that it was a fraud. In October 1935 a Boston newspaper reported that Wong had been warned by the Federal Trade Commission that he would be prosecuted unless he ceased advertising his "Soft Corns Valuable" as being good for cancer.

Saenger Concern—This Shreveport, La., outfit was run by one A D Saenger, who did business by mail under a number of "Saenger" trade styles that gave the impression that he was in the drug business. His nostrums, sold under the "Saenger" brand, included "Sarsaparilla Skin and Blood Purifier," "Wonder Wine for Women" and "Kidney Root." The Skin and Blood Purifier, advertised for syphilitic conditions, tumors, scrofula, catarrh, rheumatism and some other things, was found by government chemists to consist essentially of water sugar, sarsaparilla, alcohol (41 per cent), potassium iodide (58 grains per fluidounce), licorice and other plant extractives. The Wonder Wine for Women, claimed to be "a purely vegetable compound highly recommended for the treatment of all female weaknesses and disorders," was reported to be 18.4 per cent alcohol with sugar and water, plus yuburnum and other plant extracts. The Kidney Root, according to one claim, "Positively relieves all kidney, bladder and liver trouble." It was found to be a light brown liquid containing 10.5 per cent of alcohol, and in each fluidounce 17.8 grains of methenamine, 26.1 grains of sodium sulfate and ¼ grain of sodium salicylate, with sugar and water. The Post Office produced sufficient evidence that the Saenger business constituted a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises and on Jan 5, 1940 issued a fraud order against the concern but not against the A D Saenger back of it.

Zulema Morafma Gelo—From Mexico City this person advertised that for stated sums of money she would relieve the sufferer of any disease, all fortune and unfavorable influences. In one of her advertisements, all printed in Spanish in a San Antonio, Texas, paper, she claimed to be "The potential clairvoyant of world fame, who prophesied the European War, and who predicts another war, tells the past, present and future, a spiritualist, mental (hypnotic) suggestions, graphology, matters pertaining to astrology, love, business, psychological advice, repels unfavorable influences in all business. Highly scientific in palm reading. Consult her at Honduras 41, Department 8, Mexico, D F." Those who "bit" were requested to furnish certain information concerning their illness or difficulty and remit \$2 by international money order for advice on overcoming the condition. One customer, who stated only that he had "terrible pains in the stomach" and cramps in the legs was told to take camomile tea every morning for the stomach trouble and resort to a printed "Prayer to the Watersprites" which Zulema Gelo supplied. Expert medical testimony was produced to show that, though camomile tea may have a slight stimulant and irritant effect on the lining of the stomach, it would have no practical value in the treatment of any serious disease of the stomach, and that an irritant tea in cases of stomach ulcers and cancer, for instance, would undoubtedly increase the painful symptoms. The testimony further pointed out that persons who relied on the advice furnished by this advertiser might even lose their lives through failure to obtain proper medical treatment. The Post Office accordingly debarred the business from the United States mails by means of a fraud order issued on Nov 23, 1940.

Correspondence

SURGERY VS. INJECTION TREATMENT OF VARICOSE VEINS

To the Editor:—A communication to the editor of THE JOURNAL, May 25, 1940, page 2139, by Isaak Ludwig discussing the paper of Dean and Dulin suggests the many inconsistencies in the present discussion and treatment of varicose veins. In their paper, Dean and Dulin state that there are more fatalities than are reported with the injection treatment of varicose veins. They state that they use the high ligation plus the injection treatment in these cases. In the same paper they cite Westerbom's statistics on the comparative mortality rates with the various types of treatment, which show a mortality of 0.26 per cent with surgical treatment alone, 0.33 per cent with high ligation plus the injection treatment and only 0.036 per cent with the injection treatment alone.

These statistics, which I am convinced will check favorably with the average reliable statistics, show a ten times greater mortality rate with high ligation plus retrograde injection than with the injection treatment alone.

Kettel says, in his cited paper, that the extremely low mortality rate among patients treated by injections alone can be further reduced by proper precautions. With regard to the high ligation and retrograde injection treatment, he states that the mortality rate rises from 0.5 per cent to 1 per cent and cites Bernsten, Kilbourne, Laqua, Reichel and others. He writes "The majority of authors [Meissen, Kilbourne, Fraenkel, Gruca, Baur, Vigyozo] reject the combined treatment of high ligation and injection."

Probststein calls attention, in his cited paper, to 120,000 injections of varicose veins in a series of 15,000 consecutive cases, observed by Sicard and Gangier, without a single mortality.

Silverman writes: "A search of the literature has revealed a total of only 19 cases of embolism following in hundreds of thousands of cases."

Kilbourne reports that he did not have a single fatality in his clinic in 20,000 injections of varicose veins. He calls attention to the thrombus formed above the ligation, which is an important source of fatal embolism. Other authors have called attention to this fact. McCallig and Heyerdale (A Basic Understanding of Varicose Veins, THE JOURNAL, July 13, 1940, page 97) have well shown this graphically.

In 1922 we began the injection treatment of varicose veins at the University of Minnesota (Hayes, J. M.: Treatment of Varicose Veins, *Journal-Lancet* 45:12 [Jan. 1] 1925). Since then I have either done or supervised more than 30,000 injections without a single mortality. During this time, only 1 patient had to be hospitalized. We did not see evidence of a single embolism. Seldom do we see a patient who is not able to continue his occupation without interruption during this treatment.

In 1930 Dr. Bell's department at the University of Minnesota sectioned veins which we had removed a few days after injection. The sections show the resulting thrombus intimately interwoven with the intima of the vein. This is in striking contrast with the thrombus otherwise produced. The thrombus frequently formed above the ligation is the type that does result in fatal embolism.

McPheters and de Takats call attention to the fact that ligation at the end of the great saphenous vein would prevent thrombus above the ligation. This is true but apparently is not always done.

We have used practically every sclerosing solution suggested for this purpose since Linscr first instituted this method of treatment by injecting mercury bichloride.

In 1922 we began cautiously using mercury bichloride as the sclerosing solution. At first we accepted only patients with severely infected ulcers. These patients had all been rejected for surgery.

The injection treatment gradually replaced surgery not only in the cases of severe involvement but also in the mild, ordinary varicose veins. We made more than 2,000 injections of mercury bichloride before less toxic solutions were suggested. We had no serious results.

Previously, while at the Mayo Clinic, I worked with Dr. Sistrunk, who was doing much of the surgery of varicose veins at the clinic at that time. He employed most of the methods suggested at that time but for the most part did the Mayo stripping removal of the veins.

Many surgeons did multiple ligations, hoping to cure varicose veins in this way. The latter method caused the collapse of the vein following the operation, but frequently in a short period the veins were filled through communicating branches and appeared much as they did originally. Today we frequently see the same sort of recurrences following the high ligation.

Surgery was abandoned several years ago in the treatment of varicose veins because of the high morbidity, mortality and expense of this method when compared with the injection treatment.

In 1921 at the University of Minnesota it was evident that a large proportion of patients were not having their varicose veins treated. The large number of old, sloughing varicose ulcers was evidence of this. A few years after we began the injection treatment of varicose veins, varicose ulcers were rare.

It is true that some patients do respond more readily to high ligation and retrograde injection, but these patients are comparatively few. In the average case there is little difference in the time element with the two methods of treatment. And the inconvenience to the patient is far less with the injection treatment alone. In a large number of cases nearly as many injections are necessary after the high ligation is made. Many who do the high ligation are tempted to inject a large amount of solution at the time of ligation. With the injection treatment alone, a small amount of solution may be injected to make sure that the patient is not allergic to this particular solution. I am certain that this is one source of the serious results with the high ligation and retrograde injection method.

After observing and employing all suggested methods for the past several years, I now follow the procedure I published in *Minnesota Medicine* (13:564 [Aug.] 1930). For several years now I have injected varicose veins wherever they appear on the thigh. The results here are as good as elsewhere.

There are recurrences with this method as with all other methods, but patients do not hesitate to return to have these recurrences treated with the injection method as they do when treated surgically. We have patients return after a year or two for a few injections and continue on their job without interruption. We have followed some of these patients for from fifteen to nineteen years. Some have returned several times for a few injections but are well pleased with the results.

If only a small amount of solution is introduced at the first injection, to make sure that the patient is not allergic or has an idiosyncrasy to the solution, and, if strict asepsis is observed, little difficulty should be encountered with this method.

It has been suggested that not all the bad results have been reported in the high ligation and retrograde injection method. I am certain that this is true. In one hospital in Minneapolis there have been 2 fatalities, and another serious result, which I am sure have not been reported. These patients were all treated by well trained surgeons.

Men highly trained in the high ligation and retrograde injection method may be skilful or fortunate enough to operate with-

out bad results, but I am sure that in the hands of the average medical man the mortality rate will agree favorably with Westerborn's statistics.

Dr. de Takats has shown theoretically why injection treatment of varicose veins in cases of deep thrombophlebitis will not give good results.

Varicose veins are not functioning veins. Wherever they exist they are merely pools of stagnant blood. This blood gradually seeps through the wall of the dilated vein into the surrounding tissues. This readily creates a condition susceptible of infection. Slight trauma causes a breaking down of the local tissues, resulting in a varicose ulcer.

We have injected and thrombosed these veins for many years with no bad results. While improvement is slow, we do get good results. Our chief precaution here is to avoid giving these patients injections during acute thrombophlebitis. We usually wait from three to six months after an acute condition. An embolus may result from the acute thrombophlebitis. If injected during this time, such an embolus may be credited to the operator.

Dr. Ochstner and his associates (Treatment of Thrombophlebitis by Novocain Block of the Sympathetics, *Surgery* 5:491 [April] 1939) have popularized the paravertebral injection in cases in which ulcers exist in the presence of an old thrombophlebitis. Our experience with this method is quite limited, but in a few cases we have had excellent results. In refractory cases of old thrombophlebitis in the presence of swelling, edema and painful ulcers, this injection has proved efficacious.

It is sometimes surprising how the pain ceases, the swelling and edema subside and the ulcer sometimes clears up without further treatment. I hail this procedure as a promising aid in these troublesome cases.

J. M. HAYES, M.D., Minneapolis.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

CHICAGO, Feb. 16-17, 1942. Council on Medical Education and Hospitals, Sec., Dr. William D. Cutter, 535 North Dearborn Street, Chicago.

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in *THE JOURNAL*, August 9, page 473.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, June 16-18. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ARKANSAS: * *Medical*. Little Rock, Nov. 6-7. Sec., Dr. D. L. Owens, Harrison. *Eclectic*. Little Rock, Nov. 6. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: Oral examination (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), San Francisco, Oct. 1. *Written*. Sacramento, Oct. 20-23. Sec., Dr. Charles B. Pinkham, 1020 N St., Sacramento.

COLORADO: * *Examination*. Denver, Oct. 7. *Endorsement*. Denver, Oct. 8-10. Sec., Dr. George R. Buck, 831 Republic Bldg., Denver.

CONNECTICUT: *Medical*. Examination. Hartford, Nov. 11-12. *Endorsement*. Hartford, Nov. 25. Sec., Dr. Creighton Barker, 258 Church St., New Haven. *Homeopathic*. Derby, Nov. 11-12. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DISTRICT OF COLUMBIA: * Washington, Nov. 10-11. Sec., Dr. George C. Ruhland, 6150 East Municipal Bldg., Washington.

FLORIDA: * Jacksonville, Nov. 24-25. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, Oct. 14-15. Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDAHO: Boise, Oct. 7. Dir., Bureau of Occupational License, Mr. Walter Curtis, 355 State Capitol Bldg., Boise.

ILLINOIS: Chicago, Oct. 14-16. Supt. of Registration, Mr. Lucien A. File, Department of Registration and Education, Springfield.

INDIANA: Indianapolis, June 16-18. Sec., Board of Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

KANSAS: Kansas City, Sept. 23-24. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

KENTUCKY: Louisville, Dec. 6-10. Sec., Dr. A. T. McCormack, 620 S. Third St., Louisville.

MARYLAND: *Medical*. Baltimore, Dec. 6-12. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Eclectic*. Baltimore, Dec. 9-10. Sec., Dr. John A. Evans, 111 W. 4th St., Baltimore.

MICHIGAN: * Lansing, Oct. 15-17. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 203 Hollister Bldg., Lansing.

MINNESOTA: * Minneapolis, Oct. 21-23. Sec., Dr. J. F. Du Bois, 230 Lowry Medical Arts Bldg., St. Paul.

MISSISSIPPI: *Reciprocity*. Jackson, December. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MONTANA: Helena, Oct. 6-8. Sec., Dr. Otto G. Klein, First National Bank Bldg., Helena.

NEW HAMPSHIRE: Concord, Sept. 11-12. Sec., Board of Registration in Medicine, Dr. T. P. Burroughs, State House, Concord.

NEW JERSEY: Trenton, Oct. 21-22. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 13-14. Sec., Dr. Le Grand Ward, 135 Sena Plaza, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept. 15-18. Chief, Bureau of Professional Examinations, Mr. Herbert J. Hamilton, State Education Department, 315 Education Bldg., Albany.

NORTH CAROLINA: *Endorsement*. December. Sec., Dr. W. D. James, Hamlet.

NORTH DAKOTA: Grand Forks, Jan. 6-9. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OKLAHOMA: * *Reciprocity*. Oklahoma City, Dec. 10. Sec., Dr. James D. Osborn, Jr., Frederick.

TEXAS: Austin, Nov. 17-19. Sec., Dr. T. J. Crowe, 918 Texas Bank Bldg., Dallas.

VERMONT: Burlington, Feb. 10-12. Sec., Board of Medical Registration, Dr. F. J. Lawliss, Richford.

VIRGINIA: Richmond, Dec. 9-12. Sec., Dr. J. W. Preston, 30½ Franklin Road, Roanoke.

WISCONSIN: * Madison, Jan. 13-15. Sec., Dr. H. W. Shutter, 425 E. Wisconsin Ave., Milwaukee.

WYOMING: Cheyenne, Oct. 6-7. Sec., Dr. M. C. Keith, State Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA: Tucson, Sept. 16. Sec., Mr. Franklin E. Roach, Science Hall, University of Arizona, Tucson.

COLORADO: Denver, Sept. 10-11. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver.

CONNECTICUT: Oct. 11. Address State Board of Healing Arts, 1945 Yale Station, New Haven.

DISTRICT OF COLUMBIA: Washington, Oct. 20-21. Sec., Dr. George C. Ruhland, 203 District Bldg., Washington.

FLORIDA: DeLand, No. 1. Final date for filing application is Oct. 17. Sec., Professor J. F. Conn, John B. Stetson University, DeLand.

IOWA: Des Moines, Oct. 14. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

MINNESOTA: Minneapolis, Oct. 7-8. Sec., Dr. J. C. McKinley, 126 Millard Hall, University of Minnesota, Minneapolis.

NEBRASKA: Lincoln, Oct. 7-8. Dir., Bureau of Examining Boards, Mrs. Jeannette Crawford, 1009 State Capitol Bldg., Lincoln.

OREGON: Portland, Nov. 1. Final date for filing application is Oct. 15. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

RHODE ISLAND: Providence, Aug. 20. Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Aberdeen, Dec. 5-6. Sec., Dr. G. M. Evans, Yankton.

WISCONSIN: Madison, Sept. 20. Sec., Professor Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee.

District of Columbia May Report

The District of Columbia Board of Examiners in Medicine and Osteopathy reports the written examination for medical licensure held at Washington, May 12-13, 1941. The examination covered 9 subjects and included 60 questions. An average of 75 per cent was required to pass. Six physicians were licensed to practice medicine by reciprocity and 6 physicians so licensed on endorsement of credentials of the National Board of Medical Examiners. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
George Washington University School of Medicine.....(1934)	84.5		84.5
(1938) 84.5, (1939) 82.5, 83.6, 88.5, (1940)* 77, 77, 79, 83.5, 89.3			
Georgetown University School of Medicine.....(1939)	79.1		
81.8, 81.8, (1940)* 84.2, 88.3			
Howard University College of Medicine.....(1940)	80.8*		
The School of Medicine of the Division of the Biological Sciences.....(1938)	83.8		
Johns Hopkins.....	81		
Tufts College.....	86.5		
Washington U.....	83.1		
Columbia Unit.....	77.1		
Jefferson Medical College of Philadelphia.....(1932)	80.1		
Queen's University Faculty of Medicine.....(1932)	85.5		

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Georgetown University School of Medicine.....(1926)	Penna.		
..... Maine.....(1931)	Virginia		
..... of Medicine.....(1931)	S. Carolina		
..... of South Carolina.....(1935)	S. Carolina		
..... Universität Medizinische Fakultät, Bonn.....(1934)	New Jersey		

School	LICENSED BY ENDORSEMENT	Year	
		Grad.	with
College of Medical Evangelists.....	(1940)		
Yale University School of Medicine.....	(1934)		
Georgetown University School of Medicine.....	(1938, 2)		
Harvard Medical School.....	(1936)		
Tufts College Medical School.....	(1936)		

* Licenses have not been issued.

Alaska Reciprocity Report

The Alaska Board of Medical Examiners reports 1 physician licensed to practice medicine by reciprocity and 1 physician so licensed on endorsement of credentials of the National Board of Medical Examiners from March 25 through May 7. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year	
		Grad.	with
Columbia Univ. College of Physicians and Surgeons..	(1937)	Washington	
School	LICENSED BY ENDORSEMENT	Year	
		Grad.	with
University of Minnesota Medical School.....	(1940)		

Montana March-April Report

The Board of Medical Examiners of Montana reports the written examination for medical licensure held at Helena, March 31-April 1, 1941. The examination covered 10 subjects and included 50 questions. An average of 75 per cent was required to pass. Six candidates were examined, 5 of whom passed and 1 failed. Nine physicians were licensed to practice medicine by reciprocity and 1 physician so licensed on endorsement of credentials of the National Board of Medical Examiners. The following schools were represented:

School	PASSED	Year	
		Grad.	Per Cent
College of Medical Evangelists.....	(1941)		86.5*
Northwestern University Medical School.....	(1931)		89.7
University of Tennessee College of Medicine.....	(1933)		83.2
University of Manitoba Faculty of Medicine.....	(1940)		87.9
Universität Zürich Medizinische Fakultät.....	(1936)		86.6
School	FAILED	Year	
		Grad.	with
University of Arkansas School of Medicine.....	(1907)		
School	LICENSED BY RECIPROCITY	Year	
		Grad.	with
Northwestern University Medical School.....	(1910), (1926)	N. Dakota,	
Rush Medical College.....	(1938)	Minnesota	
The School of Medicine of the Division of the Bio-logical Sciences.....	(1937)	Wyoming	
University of Minnesota Medical School.....	(1931)	Minnesota	
University of Nebraska College of Medicine.....	(1940)	Nebraska	
Ohio State University College of Medicine.....	(1929)	Ohio	
University of Texas School of Medicine.....	(1924)	Texas	
School	LICENSED BY ENDORSEMENT	Year	
		Grad.	with
Tufts College Medical School.....	(1930)		

* This applicant has completed four years' medical work and will receive the M.D. degree on completion of internship. License has not been issued.

Minnesota April Report

The Minnesota State Board of Medical Examiners reports the written examination for medical licensure held at Minneapolis, April 15-17, 1941. The examination covered 12 subjects and included 60 questions. An average of 75 per cent was required to pass. Sixty-five candidates were examined, all of whom passed. One physician was licensed to practice medicine by reciprocity and 2 physicians so licensed on endorsement of credentials of the National Board of Medical Examiners. The following schools were represented:

School	PASSED	Year	
		Grad.	Per Cent
Yale University School of Medicine.....	(1938)		88.6
Northwestern University Medical School.....	(1939)		92.1,
(1940) 84.6, 86.6, 87.4,* 88.4			
Rush Medical College.....	(1940)		87.6
The School of Medicine of the Division of the Biological Sciences.....	(1938)		90.6
Indiana University School of Medicine.....	(1939)		88
State University of Iowa College of Medicine.....	(1938)		88.1
Tulane University of Louisiana School of Medicine.....	(1937)		87.6,
(1939) 87.5			
Johns Hopkins University School of Medicine.....	(1938)		89.4
Harvard Medical School.....	(1938)		85
University of Minnesota Medical School.....	(1939)		87.2,
87.6,* (1940) 83,* 83.4,* 86, 86.1,* 86.3,* 86.4,* 86.5,* 86.6,* 87,* 87.1,* 87.2, 87.4,* 88.1,* 88.3,* 89.1,* 89.6,* 90, 90.1,* (1941) 83,* 86.3,* 86.4, 88.3,* 89.3,* 90.1, 90.4			

St. Louis University School of Medicine.....	(1940)	88.1
Washington University School of Medicine.....	(1937)	88.2
University of Nebraska College of Medicine.....	(1937)	86.4
Croighton University School of Medicine.....	(1938)	90.3
Cornell University Medical College.....	(1938)	89.1, 89.4
Long Island College of Medicine.....	(1939)	88.8
University of Rochester School of Med. and Dentistry..	(1938)	86.2,
(1939) 87.1, 88.1		
Ohio State University College of Medicine.....	(1938)	87.6
Temple University School of Medicine.....	(1938)	90
University of Pennsylvania School of Medicine.....	(1938)	86.2, 87.3,
(1939) 90.6		
University of Texas School of Medicine.....	(1938)	86.2
Medical College of Virginia.....	(1937)	89.3
University of Virginia Department of Medicine.....	(1938)	90.1
University of Wisconsin Medical School.....	(1938)	88.6
University of Manitoba Faculty of Medicine.....	(1940)	88.6
University of Western Ontario Medical School.....	(1937)	90.6,
(1938) 86.2, 90.1		
McGill University Faculty of Medicine.....	(1938)	88.3

School	LICENSED BY RECIPROCITY	Year	
		Grad.	with
University of Chicago, The School of Medicine.....	(1939)	Illinois	
School	LICENSED BY ENDORSEMENT	Year	
		Grad.	with
Rush Medical College.....	(1939)		
Harvard Medical School.....	(1938)		

* This applicant has received the M.B. degree and will receive the M.D. degree on completion of internship.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Alleged Premature Discharge of Patient from Hospital and Abandonment of Treatment.—Milton Meiselman, a boy of 8 years at the time, was kicked in the left knee in November 1931. Shortly afterward he complained of pain in the leg, and his father called the defendant physician Schoolnik, who after examining the child stated that he was unable to treat the condition (diagnosed shortly thereafter as osteomyelitis) and suggested that the defendant physician Koster be summoned, which was done. On Koster's direction the boy was taken to the Crown Heights Hospital, Inc., a hospital conducted for profit. At that time the child was "desperately ill and required a blood transfusion." Koster operated on both legs and encased them in plaster casts. After the boy had been in the hospital eighteen weeks he was discharged, over the father's protest, allegedly because the parents had paid only about \$350 of the hospital bill of approximately \$1,000 that had been incurred to that date. At that time the patient was not cured: he had a "high temperature," he had casts on both legs and "both legs had open wounds through which pus was draining through windows" in the casts. The father, according to his testimony, was informed then by both defendant physicians that there was no need to transfer the child to a charitable hospital and that Schoolnik, under Koster's supervision, would give proper care to the boy at home. It was necessary to put dressings on the wounds about once a week, and this was done for five weeks by Schoolnik, who, it was alleged, on no occasion after the patient's discharge from the hospital consulted Koster. During this time the child suffered intense pain, his legs became increasingly worse, and on occasions Schoolnik, while attempting to remove parts of the cast, caused lacerations of the legs. Finally at Schoolnik's request the boy was sent to Kings County Hospital. When he was admitted to that institution, according to the testimony of Dr. Degenhardt, the physician who supervised his treatment there, both of his legs were in casts from the knee joints down, and he had a temperature of 101 F. On removing the casts Dr. Degenhardt found that the right ankle over the middle malleolus had a healed sinus, that there had been a long deep wound over the entire length of the left tibia, that there was a sinus over the lower end of the left femur and that there were large open wounds which were dirty and had thick white crusts about them. There was a moderate amount of thick, tenacious, purulent discharge from the region of the left tibia. Roentgenograms, subsequently taken, showed destruction of the proximal two thirds of the left tibia. The condition was then diagnosed as chronic osteomyelitis of the right tibia, left tibia and femur. The infectious process and

drainage continued until about four weeks after the boy's admission to the Kings County Hospital, at which time the improvement was so far advanced that Dr. Degenhardt put new casts, without drainage windows, on both legs from the toes to the upper third of both thighs. The next four years the boy was hospitalized and treated at the Kings County Hospital and in another institution and when finally discharged he was "severely crippled, walked with a limp, and one of his legs was stiff." He brought an action by his guardian ad litem against the Crown Heights Hospital, Inc., and the two defendant physicians, Schoolnik and Koster, for negligence and malpractice in treating him and for abandoning his case before he was cured. The trial court, even before the evidence on his behalf was concluded, dismissed the case, and its action was affirmed by the supreme court, appellate division, second department, New York. An appeal was then perfected to the Court of Appeals of New York.

On the record, said the Court of Appeals, as it stood when the trial court dismissed the action, the plaintiff had made out a prima facie case on the issue of malpractice against Schoolnik and Koster and of wilful abandonment of his case against the hospital and Koster. Sufficient evidence was presented to warrant a jury in awarding damages on those charges. At least, the jury might have found that the defendants had prematurely and wilfully abandoned the case while the patient was desperately ill and before he was cured without giving information or advice as to subsequent treatment or of the desperate and dangerous condition and character of the disease, all of which led to aggravation of his condition and illness. Common sense and ordinary experience and knowledge, such as is possessed by laymen, without the aid of medical expert evidence, might properly have suggested to the jury that the condition of the boy at the time that he was left without hospitalization and abandoned by the defendants was not compatible with skilful treatment. That the plaintiff's parents were misled by the conduct of the physicians to the child's detriment is inferable from the facts adduced. Ordinarily, to furnish a basis for the determination by a jury of unskilful practice and medical treatment by physicians, expert medical opinion evidence is required, when the subject matter to be inquired about is presumed not to be within common knowledge and experience and when legal inference predominates over statement of fact. However, when ordinary jurymen from their own experience and observation may draw their own conclusions, the opinion of experts is unnecessary.

At the trial, in connection with the testimony of Dr. Degenhardt, who had treated the boy at Kings County Hospital, the trial court, on the general objection that they were "incompetent, irrelevant and immaterial," refused to admit in evidence records of that hospital concerning the boy. The court permitted Dr. Degenhardt to refer to the records to refresh his recollection but excluded the records themselves, saying "You cannot have records when you have the witness present in court. That is the best evidence." No objection, said the Court of Appeals, was made to the admission of the records on the ground that no proper foundation had been laid for their admission or on other grounds than the general grounds stated. The blanket exclusion of the records on the grounds of incompetency, irrelevancy and immateriality left the plaintiff without proof on what may have been essential features of his case and relieved him of proceeding further with proof of facts essential to warrant their admission under the New York statute, which under stated circumstances authorizes the admission in evidence of entries and memorandums made in the regular course of any business, profession or calling. As the case stood, the records should have been admitted in evidence, and their exclusion was erroneous.

At the trial, the plaintiff called as an expert witness a Dr. Colmers, who had been licensed to practice in New York since 1936, had received his preliminary and medical education in Germany, had engaged for ten years in educational research after his graduation, thereafter for more than six years had been an assistant in the surgical clinic and chief surgeon of a hospital in Germany which had six hundred beds and thereafter was surgeon for ten more years on the staff of another hospital in Germany, specializing in general surgery. Since

coming to the United States he had been connected with a stated hospital in New York. While practicing in Germany, according to his testimony, he became familiar with the treatment of osteomyelitis because he had personally treated hundreds of such cases and had also become familiar with the treatment of that disease throughout the world by reading literature on the subject. The trial court refused to permit him to testify as an expert on the sole ground that he was not competent to testify as to the proper practice in the United States in 1932, the year in which the defendants had treated and cared for the plaintiff. The nature of osteomyelitis, said the Court of Appeals, and its cause and probable effect were proper subjects for testimony of a competent medical witness. A showing was made that the witness was skilled in the profession to which the subject relates. No precise rule has been formulated and applied as to the exact manner in which such skill and experience must be acquired. Long observation and actual experience, though without actual study of the subject, qualify a witness as an expert in a subject. Likewise, a physician may qualify himself from study of the subject alone. The extent of the expert's qualifications may always be considered by a jury in determining the weight to be given to his testimony. Residence alone neither bars a physician from testifying as an expert nor qualifies him so to do. The question of the qualification of a witness to testify as an expert is for the determination of the trial court in its reasonable discretion, which discretion, when exercised, is not open to review unless in deciding the question the trial court has made a serious mistake, has committed an error of law or has abused its discretion. In the opinion of the Court of Appeals it was an error of law for the trial court to hold that Dr. Colmers was disqualified to testify at all as an expert. Whether he was qualified to express an opinion as to whether the medical and surgical treatment of the patient by the defendants was in accord with commonly accepted medical practice, on the record before it, the court was not called on to decide.

For the reasons stated, judgment dismissing the action was reversed and a new trial was ordered.—*Miscelman v. Crown Heights Hospital, Inc.*, 34 N. E. (2d) 367 (N. Y., 1941).

Society Proceedings

COMING MEETINGS

- American Association for the Study of Neoplastic Diseases, Washington, D. C., Sept. 4-6. Dr. Eugene R. Whitmore, 2139 Wyoming Ave. N.W., Washington, D. C., Secretary.
- American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va., Sept. 11-13. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.
- American Association of Railway Surgeons, Chicago, Sept. 8-10. Dr. Daniel B. Moss, 547 West Jackson Blvd., Chicago, Secretary.
- American Congress of Physical Therapy, Washington, D. C., Sept. 1-5. Dr. Richard Kovacs, 2 East 88th St., New York, Secretary.
- American Hospital Association, Atlantic City, N. J., Sept. 15-19. Dr. Bert W. Caldwell, 18 East Division St., Chicago, Executive Secretary.
- American Roentgen Ray Society, Cincinnati, Sept. 23-26. Dr. Carleton B. Pearce, Royal Victoria Hospital, Montreal, Canada, Secretary.
- Central Association of Obstetricians and Gynecologists, New Orleans, Oct. 2-4. Dr. William F. Mengert, 515 Newton Road, Iowa City, Secretary.
- Colorado State Medical Society, Estes Park, Sept. 17-20. Mr. Harvey T. Sethman, 837 Republic Bldg., Denver, Executive Secretary.
- District of Columbia, Medical Society of the, Washington, Sept. 30 Oct. 2. Mr. Theodore Wiprud, 1718 M Street N.W., Washington, Secretary.
- Indiana State Medical Association, Indianapolis, Sept. 23-25. Mr. Thomas A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.
- Kentucky State Medical Association, Louisville, Sept. 29 Oct. 3. Dr. Arthur T. McCormack, 620 South Third St., Louisville, Secretary.
- Michigan State Medical Society, Grand Rapids, Sept. 16-18. Dr. L. Fernald Foster, 2020 Olds Tower, Lansing, Secretary.
- Mississippi Valley Medical Society, Cedar Rapids, Iowa, Oct. 1-3. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.
- National Medical Association, Chicago, Aug. 18-22. Dr. John T. Givens, 1108 Church St., Norfolk, Va., General Secretary.
- Nevada State Medical Association, Elko, Sept. 26-27. Dr. Horace J. Brown, P. O. Box 698, Reno, Secretary.
- Oregon State Medical Society, Portland, Sept. 3-6. Dr. M. L. Bridgeman, 1020 S. W. Taylor St., Portland, Secretary.
- Pacific Association of Railway Surgeons, Salt Lake City, Sept. 12-13. Dr. W. T. Cummins, 1400 Fell St., San Francisco, Secretary.
- Pennsylvania, Medical Society of the State of, Pittsburgh, Oct. 6-9. Dr. Walter F. Donaldson, 800 Penn. Ave., Pittsburgh, Secretary.
- Rocky Mountain Medical Conference, Yellowstone Park, Wyo., Sept. 2-4. Mr. W. H. Tibbals, 616 McLure Bldg., Salt Lake City, Secretary.
- Virginia, Medical Society of, Virginia Beach, Oct. 6-8. Miss A. V. Edwards, 1200 East Clay St., Richmond, Secretary.
- Washington State Medical Association, Seattle, Aug. 24-26. Dr. Verron W. Spiekard, 1308 Fourth Ave., Seattle, Secretary.
- Wisconsin, State Medical Society of, Madison, Sept. 10-12. Mr. G. B. Larson, 110 East Main St., Madison, Assistant Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1931 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Clinical Pathology, Baltimore

11:361-462 (May) 1941

- *Hemoconcentration as Related to Shock. V. H. Moon, Philadelphia.—p 361.
- Preparation and Preservation of Human Plasma III Freezing of Plasma and Preservation in Frozen State M. M. Strumia, Bryn Mawr, Pa., J. J. McGraw, Philadelphia, and J. Reichel—p 388.
- Prevention of Nonspecific and Prezone Reactions in Wassermann Test with Serums and Spinal Fluids by Addition of Egg Albumin to Complement J. A. Kolmer, with technical assistance of Elsa R. Lynch, Philadelphia—p 402.
- Studies with Agar Cup Plate Method. IV. Correlation of Agar Cup Plate Data with Antiseptic Dilution Data Ruth E. Miller and S. B. Rose, Philadelphia—p 414.
- Clinical and Laboratory Observations on So Called "Kidney Threshold for Glucose." K. Y. Yardumian and A. N. Alpern, Pittsburgh.—p 425.
- Myelogenous Leukemia Changing to Monocytic Leukemia. Report of Case. B. E. Hall and C. H. Watkins, Rochester, Minn.—p 443.

Hemoconcentration and Shock.—Moon studied hemoconcentration incident to experimental shock, intestinal obstruction, pulmonary edema, burns, bile peritonitis, various extracts of tissue, poison, drug and chemical agents and other conditions (anaphylaxis) affecting the circulation. More than 300 animals (dogs, cats, guinea pigs, rabbits, rats and monkeys) were used. The agents (venoms, bacterial toxins, cholic salts, histamine, bacterial products, peptone, barbitol and paraldehyde) and the conditions mentioned produced hemoconcentration regularly in each animal and each species. When recovery followed, the blood returned to its normal concentration. When death resulted, the engorgement and stasis of blood in capillaries and venules, ecchymoses, serous effusions and edema in soft tissues indicated endothelial damage in extensive visceral areas. These effects are related to the syndrome of shock. Capillary atony results in anoxia of the tissues, and anoxia will cause capillary atony. This is a most important and significant relationship. These two factors are reciprocal; either of them, operating alone, will bring the other into action. Thus the mechanism is self perpetuating and operates as a vicious circle. Its progress, if uninterrupted, leads to irreversible changes and death. The physiologic mechanism which regulates the movement of fluid between the blood and the tissues depends essentially on a normal semipermeable endothelium. Capillary walls so damaged that they allow whole plasma to escape cannot maintain an effective differential between the composition of the intravascular and extravascular fluids. Such a condition disarranges the relationship between water balance and absorption. Serious hemorrhage produces clinical manifestations of shock. Frequently its effects and those of anesthesia and trauma are combined. Any loss of blood or fluid contributes toward shock, and its contributory effect is proportional to the amount of blood and/or fluid lost. Hemoconcentration will distinguish between the uncomplicated effects of hemorrhage and those of shock. Shock is not limited to extensive trauma, surgery or burns. The same type of circulatory failure develops from poisoning with drugs and chemicals, abdominal emergencies, irradiation and serum sickness, metabolic intoxications and unusually severe infections. Hemoconcentration is the earliest detectable sign of threatened circulatory deficiency of capillary origin. It is as ominous as a decline in blood pressure. But hemoconcentration occurs early when compensation is effective, while hypotension indicates that compensation has failed and that death is imminent. Heretofore hemoconcentration has not been recognized, understood or utilized by physicians in their clinical studies.

American Journal of Medical Sciences, Philadelphia

201:629-784 (May) 1941

- Observations on Pathologic Physiology of Insular and External Secretory Functions of Human Pancreas A. O. Whipple and L. Bauman, New York, with technical assistance of Margaret Hamlin.—p 629.
- Vitamin C in Treatment of Diabetes L. B. Owens, J. Wright and Edna Brown, Cincinnati—p 636.
- *Some Effects of Iron on Hemoglobin Formation. W. H. Fowler and Adelaide P. Barer, Iowa City—p 642.
- The Question of "Chronic Appendicitis" J. H. L. Heintzelman and F. A. Evans, Pittsburgh—p 651.
- Demonstration That in Normal Man no Reserves of Blood Are Mobilized by Exercise, Epinephrine and Hemorrhage. R. V. Ebert and E. A. Stead Jr., Boston—p 655.
- Effect of Arterial and Venous Constriction Induced by Paredrine (p-Hydroxy α -Methylphenylethylamine Hydrobromide) on Lung Capacity and Its Subdivisions A. Iglaier and M. D. Altschule, Boston.—p 664.
- Comparative Value of Ether and Paraldehyde as Agents for Measurement of Arm to Lung Circulation Time in Fifty Patients With and Fifty Patients Without Heart Failure, H. H. Hussey and S. Katz, Washington, D. C.—p 669.
- Characteristic Electrocardiograms in Left Ventricular Strain With and Without Axis Deviation. L. D. Kaplan and L. N. Katz, Chicago.—p 676.
- Alterations of T Waves Caused by Change of Posture. D. Sherf and J. Weissberg, New York—p 693.
- *Fat Tolerance Tests in Psoriasis E. B. Le Win and I. Zugerman, Philadelphia—p 703.
- Urine Excretion of Sulfapyridine in Rat: Relationship of Liver to Urolithiasis J. V. Scudi and H. J. Robinson, Rahway, N. J.—p 711.
- Sulfathiazole in Treatment of Pneumonia in Infants and Children. A. V. Stoesser and R. Mooney, Minneapolis—p 718.
- Distribution of Sulfanilamide Between Blood and Cerebrospinal Fluid, with Special Reference to Intraspinal Treatment S. Katzenelbogen, B. A. Cruvant and C. Silverberg, Washington, D. C.—p 724.
- Failure of Para-Aminobenzoic Acid to Inhibit Sulfonamide Rash and Fever. C. Strauss and M. Finland, Boston—p 730.
- Mode of Action of Magnesium Sulfate in Reducing Hypertension of Acute Glomerulonephritis. M. I. Rubin and M. Rapoport, Philadelphia—p 734.
- Alimentary Azotemia. Clinical Syndrome Occurring as Part of Bleeding Peptic Ulcer Complex C. F. Chunn, Vicksburg, Miss, and H. N. Harkins, Detroit—p 745.
- Vitamin C Studies in the Aged H. A. Rafsky and B. Newman, New York—p 749.
- Scarlatiniform Erythema with Systemic Reaction Following Inunction with Mercurial Ointment O. E. Billo, New York—p 756.

Effects of Iron on Hemoglobin Formation.—Fowler and Barer gave iron and ammonium citrates or reduced iron to 25 nurses and young adults healthy except for a mild anemia. These preparations produced an increase in the blood hemoglobin, which reached a peak at the end of from ten to twelve weeks. Following this peak there was a gradual reduction in the hemoglobin level regardless of whether or not therapy was continued for only the sixty days or throughout the period of observation. The increase in hemoglobin, the peak and subsequent reduction were similar in patients with mild grades of anemia and in individuals with low normal hemoglobins, although in the latter group the hemoglobin fell to the pretreatment level, whereas in the former it remained elevated but at a level below the point of maximal response. The results suggest a stimulating action of iron on hemoglobin formation in addition to its action as replacement therapy.

Fat Tolerance Tests in Psoriasis.—There is a growing tendency to attribute psoriasis to a generalized disturbance in fat metabolism. Le Winn and Zugerman studied the fat tolerance of 10 patients with this disease. Changes in the total cholesterol of whole blood were used as an index of the degree of alteration of the blood lipid level. The patients showed no significant changes as compared with 13 nonpsoriatic subjects acting as controls. The incidence of psoriasis in conditions such as hypothyroidism, diabetes mellitus, xanthelasma, nephrosis and pregnancy, exhibiting hypercholesterolemia or hyperlipemia, was reviewed. Only pregnancy was found to have a relationship to psoriasis, and its influence was beneficial. The amelioration of psoriasis in starvation, low fat intake and pregnancy and in individuals receiving adrenal cortex extract or hypophyseal corticotrophic hormone is, in the authors' opinion, the result of the mobilization of fats and lipoids from all the tissues. This removes from the skin substances whose presence is irritating. Psoriasis is a disease due to conditions existing locally in the skin. A generalized disturbance in fat metabolism may possibly contribute to such local conditions.

American J. Obstetrics and Gynecology, St. Louis

41:733-914 (May) 1941. Partial Index

- Study of Corpora Lutea and Endometriums in Patients with Uterine Fibroids. J. I. Brewer and H. O. Jones, Chicago.—p. 733.
- Analysis of Some Factors Associated with Posttoxicemic Hypertension. L. C. Chesley, W. H. Somers, H. R. Gorenberg and J. A. McGeary, Jersey City, N. J.—p. 751.
- *Vitamin K Administered to Mother During Labor as Prophylaxis Against Hemorrhage in Newborn Infant. A. C. Beck, E. S. Taylor and R. F. Colburn, Brooklyn, p—765.
- Hyperthyroidism at Menopause. M. G. Wohl and N. Pastor, Philadelphia.—p. 792.
- Advantages of Conservative Obstetrics as Shown by Examination Six Weeks Post Partum: Review of 2,000 Cases. H. B. Nelson and D. Abramson, Boston.—p. 800.
- *Sickle Cell Anemia in Pregnancy: Review of Literature and Report of Six Cases. A. J. Kobak, P. J. Stein and A. F. Daro, Chicago.—p. 811.
- Prolapse of Umbilical Cord: Analysis of 155 Cases. G. A. Bourgeois, Jersey City, N. J.—p. 837.
- Anoxia Following Nitrous Oxide Anesthesia for Labor. T. R. Turino and H. R. Merwarth, Brooklyn.—p. 843.
- Jelly Contraceptives: Three Year Investigation. I. F. Stein and M. R. Cohen, assisted by Rita Nielsen, Chicago.—p. 850.
- Observations on Occurrence of Clostridium Welchii in Vagina of Pregnant Women. J. F. Sadusk Jr., New Haven, Conn., and C. P. Manahan, Baltimore, with technical assistance of E. H. Stewart, Baltimore.—p. 856.
- Clinical Experiments with Diethylstilbestrol: I. Estrogen Withdrawal Bleeding in Primary and Postmenopausal Amenorrheic Women. A. Palmer, San Francisco.—p. 861.
- Presence of Excessive Amounts of Gonadotropic Principle in Urine of Patients with Thyroid Disease. L. P. Howell, Della G. Drips and H. C. Fisher, Rochester, Minn.—p. 868.
- Clinical Experience with Pregneninolone. E. S. Burge and H. J. Holloway, Chicago.—p. 873.
- Malaria Complicating Pregnancy: Report of Twenty-Seven Cases. R. Torpin, Augusta, Ga.—p. 882.
- Intestinal Obstruction Complicating Pregnancy. C. J. Barone, H. A. Power, C. L. Kuhn, Pittsburgh.—p. 890.
- Central Placenta Praevia with Accessory Lobe. S. L. Siegler and J. J. Sachs, Brooklyn.—p. 901.

Vitamin K Administered During Labor.—Beck and his associates studied the clotting activity on the first, second and fourth days of life of 200 infants. Vitamin K was given during labor to alternate mothers. The clotting activity of the 100 control infants on the first day of life was approximately 70 per cent of that observed in normal adults. A physiologic fall in prothrombin usually occurred on the second day. This fall at times may reach dangerously low levels. Evidence of hemorrhage was present in 50 per cent of the infants whose clotting activity fell below 35 per cent of normal. By the fourth day clotting values tended to approach the first day levels and usually reach the first day level by the sixth day. A clotting activity in newborn infants approaching that of the normal adult may be obtained on the first day by the prophylactic administration of vitamin K to the mother during labor. Vitamin K administered to the mother during labor also prevents the physiologic fall in prothrombin values. Only 1 infant among the 100 whose mothers received vitamin K during labor had a clotting value on the fourth day of 38 per cent of the normal adult value. Vitamin K given during labor and ante partum should prevent some of the hemorrhages which occur in newborn infants. Only 5, or 0.5 per cent, of 1,022 infants whose mothers received vitamin K showed any evidence of hemorrhage in contrast with 21, or 2 per cent, of 1,037 control cases. Accordingly, vitamin K should be valuable in reducing the incidence of hemorrhage in all newborn infants, and especially so in premature infants or after long labor and operative procedures.

Sickle Cell Anemia in Pregnancy.—The report of Kobak and his co-workers on 6 cases of sickle cell anemia occurring during pregnancy brings the total to 17. The anemia is believed to be a familial disease transmitted by both sexes as a dominant mendelian characteristic. It is seen only in the younger age groups; most persons with active signs of the disease die (either from the effects of the anemia or from intercurrent diseases) before they are 30 years of age. This is suggested by the ages of the 17 patients with sickle cell anemia during pregnancy; the youngest patient was 18 and the oldest was 30, the average age being 22.4 years. Only 3 of 15 became multiparas. The

viable stage of gestation was reached by 13 of the 17 mothers. There were 5 deaths; 4 necropsies were held. Abdominal crisis was the terminal cause of 2, multiple thrombi and complicating pulmonary embolus with multiple terminal infarcts of 1, puerperal sepsis of 1 and hepatosplenomegaly and parenchymatous degeneration of various organs, including the heart, of the remaining patient. Certain clinical symptoms are frequently observed. The patients are usually thin and underdeveloped. Complaints consist of frequent attacks of respiratory infections, joint and muscle pains, vague abdominal pains with nausea and vomiting, occasional fever, ulcers of the legs, jaundice and cardiorespiratory symptoms associated with a severe anemia. The disease is characterized by remissions and exacerbations. During pregnancy, hypertensive or preeclamptic toxemia develops frequently in these patients. Roentgenologically osteoporosis of the long bones is commonly seen, while the skull shows increased thickness of the calvarium and loss of continuity of the outer table, and the marrow cavity is replaced by altered bone formations. The final diagnosis rests on the blood picture. During acute episodes there is a profound anemia; the erythrocyte count is usually below 2,500,000 with a corresponding decrease in hemoglobin. A leukocytosis far in excess of that expected in pregnancy is seen. Most of the erythrocytes are sickle shaped. The prognosis is grave, and most of the patients die before the age of 30. Pregnancy apparently has an unfavorable effect; 5 of the 15 whose clinical history is on record did not survive the pregnancy. At least 2 additional mothers have died sometime subsequent to the publication of their case reports. The prognosis for the fetus in utero is also unfavorable. Available data of 15 mothers reveal that 5 had one or more abortions. These mothers had thirty-seven pregnancies, of which only twenty-five were carried to viability. Nineteen of the viable babies were born alive, whereas 6 were macerated stillbirths. The blood of at least 8 of the babies born alive had sickled erythrocytes. Follow-up studies may have enlarged this number. Intensive antianemic therapy and multiple blood transfusions have had a measure of success. The authors believe the improvement to be only temporary. The treatment of any intercurrent disorder and general supportive measures (rest and a diet high in calory and vitamin content) aid improvement.

Annals of Internal Medicine, Lancaster, Pa.

14:1969-2166 (May) 1941

- *Factors Influencing Fatality Rate of Pneumococcal Pneumonia Treated with Sulfonamide Compounds. H. F. Flippin, L. Schwartz and J. H. Clark, Philadelphia.—p. 1969.
- Acute Syphilitic Nephrosis in Adults: Three Cases, E. W. Patton, Nashville, Tenn., and M. B. Corlette, Pasadena, Calif.—p. 1975.
- Hormone, Central and Renal Origin of "Essential" Hypertension (Cerebral and Renal Arteriosclerotic Ischemia as Causal Factors). W. Raab, Burlington, Vt.—p. 1981.
- Clinical Significance of Low or "Flat" Oral Glucose Tolerance Curve. M. J. Lepore, New York.—p. 2008.
- Clinical Significance of Blood Volume. J. G. Gibson, 2d, Boston.—p. 2014.
- Acute Occlusion of Peripheral Arteries: Clinical Analysis and Treatment. G. Saland, New York.—p. 2027.
- *Treatment of Barbiturate Intoxication, with Special Reference to Picrotoxin: Report of Twenty Cases. J. P. Anderson, Cleveland.—p. 2037.
- Circumscribed and Isolated Bronchiectasis. J. Chapman and J. A. Wiggins, Sanatorium, Texas.—p. 2047.
- Therapeutic Effectiveness and Potency of Digilamid in Treatment of Congestive Heart Failure. R. C. Batterman, D. V. Hollman and A. C. DeGraff, New York.—p. 2058.
- Follicular Type of Malignant Lymphoma: Survey of Sixty-Three Cases. E. A. Gail, H. R. Morrison and A. T. Scott, Boston.—p. 2073.
- Endemic Typhus Fever in Hawaii. S. E. Doolittle, Honolulu, Hawaii.—p. 2091.
- Insight as an Aim in Psychotherapy. H. Cleckley, Augusta, Ga.—p. 2115.

Fatality Rate of Pneumococcal Pneumonia.—Flippin and his associates discuss factors which influence the prognosis of pneumonia. Their study is based on the results among 800 adult pneumococcal pneumonia patients, the mortality among whom was 10 per cent. Fifty-four and two-tenths per cent of the patients were 40 or more years of age. Among the fatalities 83.7 per cent represented patients in this age group. The mortality rate was 3.5 per cent for patients 12 to 39 years of age and 15.4 per cent in the higher age group. This significant

difference is largely a result of the higher incidence of associated diseases in older patients. The age of the patient is probably the most important single factor in the prognosis of this disease. Treatment during the first four days of the disease, with a mortality rate of 5.6 per cent, was received by 65.3 per cent of the patients, which represented 36.2 per cent of the deaths. Among the patients treated after the fourth day of illness there was a mortality rate of 18.4 per cent, and 63.8 per cent of the fatalities were among these patients. The first three types of pneumococci gave the highest mortality rate (12.2 per cent); 17.4 per cent were type III infections (often in elderly and debilitated patients) with a mortality rate of 20 per cent as compared to 7 and 10.5 per cent for types I and II respectively. The type of pneumococcal pneumonia has a direct bearing on prognosis. The incidence of bacteremia for all the patients was 12 per cent, whereas 40 per cent of the patients who died had positive blood stream infections. The fatality rate for the bacteremic patients was 32.3 per cent. Complications developed in 48 patients. They were mild in 35 and none of these died. The mortality rate was 53.8 per cent for the remaining 13 with severe complications. Associated disease was present in 264 patients. Race and sex appeared to be of little or no prognostic significance. The widespread distribution and administration of sulfonamide therapy in pneumonia will have a definite influence on hospital practice, as more patients will be treated at home and only the severely ill will be sent to a hospital. This will undoubtedly result in a reduction in the general mortality but an increase in hospital fatality rates. The use of the drugs for many types of infections will probably increase drug sensitivity, and the problem of chemotherapeutic toxicity may become more acute. Other factors which have a bearing on the prognosis are the geographic location, rural or urban community, the economic status, occupational hazards, the presence of unsuspected or untreated disease, the time of seeking medical aid and overindulgence in alcohol and the habits of a patient.

Treatment of Barbiturate Intoxication.—Anderson treated 20 patients for barbiturate poisoning; all of them took the drug with suicidal intent. Picrotoxin was used for all but 6 of the patients, in whom the intoxication was mild and responded to other methods of treatment. Study shows that there is a considerable margin of safety in the use of barbiturates. No extreme intoxications occurred with quantities less than twelve times the usual dosage. The interval between the ingestion of the drug and the beginning of treatment is extremely important. Even large doses may not cause serious consequences if gastric lavage is carried out within a few hours. Patients with bulbar paralysis, hyperpyrexia, tachycardia and shallow respirations die unless some powerful stimulant is employed immediately. Because of depressed respiratory function and the resulting atelectasis, the first signs of pneumonia must be detected and sulfapyridine therapy instituted at once. Three of the author's patients with extensive pneumonia and severe barbiturate poisoning recovered. In severe cases ordinary stimulants, caffeine, strychnine and nikethamide, are ineffective. Solutions of dextrose and sodium chloride intravenously, supplemented in some instances by injections of salyrgan, have an important place in therapy. When cyanosis is present, oxygen by the inhalation method is helpful. Metrazol was used for 2 patients; 1 of them recovered with no other treatment, and in the other picrotoxin was substituted but the patient died. Picrotoxin is the drug of choice in treating barbiturate intoxication. It is a powerful stimulant, and the author has observed no ill effects from its use. For best results it should be instituted promptly if the reflexes are abolished and should be given intravenously at the rate of approximately 1 cc., or 3 mg., per minute until the corneal reflexes reappear and the patient responds to painful stimuli. Thereafter it should be repeated every one or two hours in sufficient dosage to keep the corneal reflexes active. Whenever the patient is allowed to lapse into a severe depression for several hours his chances of recovery are greatly lessened. Giant bullas occurred in pressure areas of several patients. The dosage of picrotoxin was decreased deliberately in 1 or 2 instances, until it was ruled out as the cause. The author believes that their occurrence is reported for the first time. The giant bullous lesions varied in size

from 2.5 to 10 cm. Severe peripheral neuritis developed in 1 patient and similar, though less severe, symptoms in another. This emphasizes the importance of nutritional deficiency. Many of the patients are psychoneurotic and there is little point in preventing their suicide unless the proper psychiatric and social treatment is furnished afterward. Some are normal mentally, but their living conditions are so poor that they are driven to destroy themselves. Investigation by a social worker, followed by encouragement and the necessary aid, may restore some of the latter patients to a useful place in the community.

Archives of Internal Medicine, Chicago

67:895-1098 (May) 1941

- *Pressor Properties of Extracts from Normal and from Ischemic Kidneys. J. R. Williams Jr., Nashville, Tenn.; A. Grollman, Baltimore, and T. R. Harrison, Nashville, Tenn.—p. 895.
- *Primary Bacillus Friedländer (Klebsiella Pneumoniae) Pneumonia: Therapy of B. Friedländer B Pneumonia. E. Perlman and J. G. M. Bullowa, New York.—p. 907.
- *Use of Sulfanilamide and Sulfapyridine in Therapy of Subacute Bacterial Endocarditis. M. Friedman, with collaboration of A. Selzer and Patricia McLean, San Francisco.—p. 921.
- Correlation of Velocity of Blood Flow and Basal Metabolic Rate. S. Baer and H. J. Isard, Philadelphia.—p. 939.
- Osteogenesis Imperfecta: Its Incidence and Manifestations in Seven Families. F. R. Reisman and W. M. Yater, Washington, D. C.—p. 950.
- Obesity: Its Pathogenesis, Etiology and Treatment. J. Bauer, Hollywood, Calif.—p. 968.
- Right-Sided Aorta with Descending Aorta Simulating Aneurysm. Ursula J. Roche, I. Steinberg and G. P. Robb, New York.—p. 995.
- Life Expectancy in Conductive Disturbances Affecting Ventricular Complex of Electrocardiogram: I. General Considerations of Bundle Branch Block with Concordant and with Discordant Graphs and Wide S Wave Pattern, Based on 1,611 Cases. F. A. Willius, T. J. Dry and R. Reeser Jr., Rochester, Minn.—p. 1008.
- Id: II. Special Consideration of Bundle Branch Block with Concordant Graphs and with Discordant Graphs. R. Reeser Jr., F. A. Willius and T. J. Dry, Rochester, Minn.—p. 1027.
- Id: III. Special Consideration of Wide S Wave Pattern, with Report of Three Cases. T. J. Dry, F. A. Willius and R. Reeser Jr., Rochester, Minn.—p. 1034.
- Urinary Protein Partitions in Amyloid Nephrosis. S. Berg, Newark, N. J.—p. 1050.
- Diseases of Heart: Review of Significant Contributions Made During 1940. A. Graybiel, with editorial assistance of P. D. White, Boston.—p. 1061.

Pressor Activity of Kidneys.—Williams and his associates produced unilateral renal ischemia in dogs and rats, prepared fractions from such kidneys by extraction with a solution of sodium chloride or by precipitation with alcohol and determined their pressor action. The results were as follows: 1. The extracts from ischemic kidneys of dogs usually had a distinctly greater pressor effect than similar extracts from normal kidneys of the same animal. When the degree of ischemia was so severe as to induce necrosis, the abnormal kidney had less pressor effect than the normal organ. 2. The extracts from normal rat kidneys had as much or more pressor effect when compared with those of their ischemic kidneys, provided the fractions were tested soon after being prepared. 3. One important similarity was displayed by kidneys from both rats and dogs: on standing, the extracts from normal kidneys usually became less pressor and those from the ischemic organs tended to become more pressor. 4. When enzymatic processes were reduced to a minimum by rapid freezing and desiccation of the kidneys while frozen, the extracts in many instances had practically no pressor effect. However, usually a well defined pressor action developed if such inactive, freshly prepared extracts were allowed to stand. The authors believe that the divergent results of the pressor activity of normal and ischemic kidneys obtained by previous investigators were apparently due to (1) difference in the species of animals used as a source of kidneys and (2) changes occurring in the activity of the extracts after preparation. The apparent renin content of an extract is extremely variable; it may increase or decrease with time or even be absent under certain conditions.

Primary Bacillus Friedländer Pneumonia.—Perlman and Bullowa state that among 2,450 cases of pneumonia there were 37, or 1.5 per cent, caused by the Friedländer bacillus; in 29 the causative organism was Bacillus Friedländer A and in 8 B. Friedländer B. Friedländer pneumonia occurs predominantly in older people and it occurs much more frequently in men than in women; 32 of the 37 patients were men. Of 29 patients with Friedländer A pneumonia, 28 were men. The incidence

of bacteremia averages about 70 per cent. In the present series (A and B forms) it was 32.5 per cent; 7 of those with Friedländer A pneumonia and 5 of those with Friedländer B pneumonia. The mortality among the patients with Friedländer A and B pneumonia did not differ significantly, being 86 and 75 per cent, respectively, from that reported by other workers. There appears to be no relationship between bacteremia and mortality; in fact, the authors' patients without bacteremia had a somewhat higher mortality than those with bacteremia. Of 23 patients with Friedländer A pneumonia, 6 of whom had bacteremia, treated with sulfanilamide or sulfapyridine or serum alone or combined with chemotherapy 20 died, and of 6 untreated patients, 1 of whom had bacteremia, 5 died. All the 13 patients treated with serum alone, 3 with rabbit and 10 with horse serum, died. Of 6 treated patients with Friedländer B pneumonia, 4 of whom had bacteremia, 5 died, and of 2 untreated patients the 1 without bacteremia died. Serum, sulfanilamide (or sulfapyridine) or the combined therapy seemed ineffectual in treating patients with B. Friedländer pneumonia. One hopeful trend could be seen among the patients with Friedländer A pneumonia, for 3 of 8 patients treated with the drug recovered.

Sulfanilamide and Sulfapyridine for Endocarditis.—According to Friedman, it is of utmost importance in treating bacterial endocarditis chemotherapeutically to know whether the drugs act directly on the invading micro-organism or act by increasing tissue resistance against invasion. If sulfanilamide or sulfapyridine is to be effective, the drug must not only be able to destroy or definitely inhibit the growth of *Streptococcus viridans* without the physical aid of living tissue but also be able to penetrate the fibrin-platelet barrier characteristic of the disease in sufficient concentration to affect its results. If a drug's effectiveness depends on the potentiation of living tissue resistance or if it is unable to penetrate this barrier which protects the organisms and isolates them from living tissue, it will probably be of no value in bacterial endocarditis. The author carried out a series of experiments to determine (1) the degree of penetrability of both drugs through fibrin-platelet masses, (2) their in vitro effects on three strains of *Streptococcus viridans*, (3) effects in vivo on animals harboring these strains of *Str. viridans* but with the complete isolation of the micro-organisms from living tissue, (4) the effects of prolonged administration of both drugs on infected animals and (5) the actual results of the drugs administered to patients suffering with subacute endocarditis due to *Str. viridans*. Sulfanilamide or sulfapyridine was not able to penetrate easily the fibrin-platelet mass containing *Str. viridans*. The production of a focus of protected growth of *Str. viridans* in the abdomen of the rabbit with the concomitant parenteral administration of sulfapyridine or sulfanilamide to the animal showed that the two drugs were no more effective against *Str. viridans* in vivo than they were in vitro; but if the inoculum was small and its growth was not allowed to progress too far, the effectiveness of either drug, particularly sulfapyridine, was such that it was supposed that living tissue would have furnished no further aid in destroying the organism. It may be that the powerful effect of these drugs when given parenterally to animals infected with the hemolytic streptococcus, as contrasted with their possible equivocal action on the same organism in the test tube, is due to the fact that the bacterial invasion in the body is relatively slight and the number of bacteria per unit of invaded tissue is far less than that present in various test tube experiments. Despite the effectiveness of the drugs on *Str. viridans* when they were placed in immediate contact with a small inoculum, if as little as six hours were allowed to elapse between contact of either of the drugs and the initial inoculum of *Str. viridans* their bactericidal action, despite concentrations, was nil. The experimental production of a fibrin-platelet mass infected with the organism but separated from living tissue by means of a porcelain filter capsule led to a persistence of infection despite the quantity and duration of administration of either drug. The effectiveness of the drugs was negligible in 12 patients with subacute endocarditis caused by *Str. viridans* treated with sulfanilamide or sulfapyridine or both. Three of the patients received intensive heparin therapy in conjunction with sulfapyridine or sulfanilamide, and the results were equally negative. Although Friedman, Hamburger and Katz were the first to

suggest and use heparin in subacute endocarditis and although favorable results have been reported by Kelson and White, it is now believed by them that its action either alone or with sulfapyridine is of no real value.

Bulletin of Johns Hopkins Hospital, Baltimore 68:353-424 (May) 1941

- Observations on Morphology and Functions of Some Components of Coronary Circuit. J. T. Wearn, Cleveland.—p. 353.
Alterations in Heart Accompanying Growth and Hypertrophy. J. T. Wearn, Cleveland.—p. 363.
Studies in Vitamin A: Relation of Blood Level and Adaptation to Dim Light to Diet. H. W. Josephs, Margaret Baber and H. Conn, Baltimore.—p. 375.
Result of Contact with 2,400 Volt Circuit: Report of Unusual Case. F. H. Hesser, Baltimore.—p. 388.
Multiple Self-Inflicted Subcutaneous Abscesses: Case Report. A. Klein, Baltimore.—p. 409.
Loss of Virulence of *Treponema Pallidum* in Citrated Blood at 5 C. O. Bloch Jr., Baltimore.—p. 412.

Canadian Public Health Journal, Toronto 32:231-286 (May) 1941

- Determination of Nutritional Status. E. W. McHenry, Toronto.—p. 231.
Dietary Survey in Halifax. E. G. Young, Halifax, N. S.—p. 236.
Inquiry into Customary Nutrition of Families with Small Salaries in the City of Quebec. J. E. Sylvester and Honoré Nadeau, Quebec, Que.—p. 241.
Dietary Investigation in Toronto Families Having Annual Income Between \$1,500 and \$2,400. J. M. Patterson and E. W. McHenry, Toronto, Ont.—p. 251.
Dietary Survey in Edmonton. G. Hunter and L. B. Pett, Edmonton, Alta.—p. 259.

Delaware State Medical Journal, Wilmington 13:69-84 (May) 1941

- Renal Aspects of Hypertensive Vascular Disease. E. Weiss, Philadelphia.—p. 69.
Genitourinary Disease and Diagnosis. E. L. Stambaugh, Lewes.—p. 79.

Florida Medical Association Journal, Jacksonville 27:533-580 (May) 1941

- Exanthem Subitum (Roseola Infantum). C. C. Rudolph, St. Petersburg.—p. 547.
Staphylococcus Toxoid in Impetigo. T. F. Hahn, DeLand.—p. 549.
Review of Treatment of Atrophic Arthritis. J. P. Rowell, St. Petersburg.—p. 551.
Summary of Ten Years' Practice in Obstetrics. W. C. Thomas, Gainesville.—p. 557.
Hematuria as Result of Sulfanilamide Therapy: Report of Two Cases. N. Weil Jr., Jacksonville.—p. 562.
Excretory Function of Small Intestine in Renal Insufficiency. E. B. Campbell, St. Petersburg.—p. 565.

Journal of Experimental Medicine, New York 73:681-806 (June) 1941

- Quantitative Chemical Studies on Complement or Alexin: I. Method. M. Heidelberger, New York.—p. 681.
Id.: II. Interrelation of Complement with Antigen Antibody Compounds and with Sensitized Red Cells. M. Heidelberger, A. J. Weil and H. P. Treffers, New York.—p. 695.
Inheritance in Guinea Pigs of Susceptibility to Skin Sensitization with Simple Chemical Compounds. M. W. Chase, New York.—p. 711.
Casein Digests Parenterally Utilized to Form Blood Plasma Protein. S. C. Madden, L. J. Zeldis, A. D. Hengerer, L. L. Miller, A. P. Rowe, A. P. Turner and G. H. Whipple, Rochester, N. Y.—p. 727.
Simplified Perfusion Apparatus for Maintenance of Living Organs in Vitro. C. Galli-Mainini, Boston.—p. 745.
Nature of Nonparalytic and Transitory Paralytic Poliomyelitis in Rhesus Monkeys Inoculated with Human Virus. A. B. Sabin and R. Ward, Cincinnati.—p. 757.
*Natural History of Human Poliomyelitis: I. Distribution of Virus in Nervous and Non-Nervous Tissues. A. B. Sabin and R. Ward, Cincinnati.—p. 771.

History of Human Poliomyelitis.—Sabin and Ward performed necropsies in 11 fatal cases of poliomyelitis and examined various tissues to determine whether the virus was predominantly distributed in any one system. The results show that the virus is so distributed in certain regions of the nervous system and in the alimentary tract. This knowledge permits the following reevaluation of the various prevailing hypotheses of the disease in human beings: 1. The absence of demonstrable virus in the olfactory bulbs and anterior perforated substance indicates that in man the olfactory pathway need not be affected. 2. The absence of infective virus in the nasal mucosa suggests that this is not the site of virus multiplication and dissemination.

3. The virus was not present in the salivary glands, indicating that the saliva is not an elimination route. 4. The positive results with the tonsils and pharyngeal mucosa are probably due to the pharyngeal tissue rather than to the tonsils. 5. In the alimentary tract the virus is present not only in the contents but also in the washed walls of various parts of the tract, including the pharynx, ileum and occasionally the colon. 6. Infection of the walls of the alimentary tract appears to be the result neither of primary localization nor the port of entry. 7. Its distribution in the central nervous system is limited to certain areas and is not as indiscriminately disseminated as viruses (e. g., equine encephalomyelitis) which can invade through the blood vessels or those (e. g., rabies) which are capable of extensive centrifugal spread. 8. In the absence of evidence of any appreciable centrifugal spread to peripheral collections of nerve cells, the demonstration of virus in the abdominal sympathetic ganglions of 1 case suggests one of the possible routes of virus progression in certain instances. The pattern of virus distribution in human poliomyelitis, according to the study, points to almost the entire alimentary tract as the primary site of attack by the virus and supports in no way the concepts involving either the olfactory pathway or the respiratory tract. The distribution also militates against the cutaneous route, although it is conceivable that occasional infection through the broken skin may be possible. There appears to be much similarity between this picture of human poliomyelitis and that of Theiler's spontaneous mouse encephalomyelitis or poliomyelitis, in which Olitsky demonstrated that the virus is carried in the intestinal tract of many normal mice, although paralysis develops in only 1 of 2,000 to 5,000 mice. The subsequent demonstration by Theiler and Gard and by Olitsky that the infectious agent is also present in the washed intestinal wall and that this is the most probable origin of the virus in the intestinal contents brings out a most remarkable analogy between the two diseases.

Journal of Immunology, Baltimore

40:399-518 (April) 1941

- Concerning Mechanism of Anaphylactic and Tryptic Shock. M. Rocha Silva, São Paulo, Brazil, South America—p. 399
- Studies of X Strain (Dyer) of Rickettsia Burneti. I. Chorioallantoic Membrane Infections. F. M. Burnet and Mavis Freeman, Melbourne, Australia.—p. 405.
- Id. II. Guinea Pig Infections, with Special Reference to Immunologic Phenomena. F. M. Burnet and Mavis Freeman, Melbourne, Australia.—p. 421.
- Antitoxin Formation After Intravenous or Subcutaneous Injection of Plain or Alum Diphtheric Toxoid. J. Freund and Mary V. Bonanto, Otisville, N. Y.—p. 437.
- Nonspecific Flocculation of Scarlet Fever Toxin and Antitoxin. W. E. Bunney and W. L. Koerber, New Brunswick, N. J.—p. 449.
- Preparation of Protein Free Scarletinal Toxin. W. L. Koerber and W. E. Bunney, New Brunswick, N. J.—p. 459.
- Dissociation of Aggregates Obtained on Adding Beef Heart Lipoid to Wassermann Positive Serums. O. Bier and E. Trapp, São Paulo, Brazil, South America—p. 465.
- Blood Platelets in Anaphylaxis. N. Kopeloff and Lenore M. Kopeloff, with technical assistance of Esther C. Posselt and B. Blatterberg, New York.—p. 471.
- Further Studies of Orientation of Reactive Sites in Thin Films of Streptococcus Antigens. L. A. Chambers, J. B. Bateman and H. E. Calkins, Philadelphia—p. 483.
- Repeated Vaccination of Man Against Virus of Equine Encephalomyelitis. Dorothy Beard, H. Finkelstein and J. W. Beard, Durham, N. C.—p. 497.

41:1-126 (May) 1941

- Histamine Tolerance and Anaphylactic Death in Sensitized Guinea Pigs. Elizabeth Smith Karady, Grand Forks, N. D.—p. 1.
- Immunologic Studies of Pollinosis. II. Passive Sensitization of Man Through Transfusion. Mary Hewitt Loveless, New York.—p. 15.
- Studies of Hemolytic Streptococcus Antibodies in Control Groups, Rheumatic Fever and Rheumatoid Arthritis. I. Incidence of Antistreptolysin O, Antifibrinolysin and Hemolytic Streptococcus Precipitating Antibodies in Serum of Urban Control Groups. J. R. Mote and T. D. Jones, Boston.—p. 35.
- Id. II. Frequency of Antistreptolysin O, Antifibrinolysin and Precipitating Antibody Responses in Scarlet Fever, Hemolytic Streptococcus Infections and Rheumatic Fever. J. R. Mote and T. D. Jones, Boston.—p. 61.
- Id. III. Magnitude of Antistreptolysin O, Antifibrinolysin and Precipitating Antibody Responses, Persistence of Antibodies and Variations in Antistreptolysin O Curves in Scarlet Fever, Hemolytic Streptococcus Infections and Rheumatic Fever. J. R. Mote and T. D. Jones, Boston.—p. 87.
- Potency of Staphylococcus Toxoid. L. N. Farrell, Toronto, Canada—p. 119.

Journal of Lab. and Clinical Medicine, St. Louis

26:1239-1402 (May) 1941

- Influence of Coronary Sclerosis, Chronic Congestive Heart Failure and Myocardial Fibrosis on Cardiac Hypertrophy. M. E. Maun, Detroit.—p. 1239.
- Dissecting Aneurysm of Aorta. Summary of Clinical Syndrome and Pathology Together with Report of Case Showing Unusual Pathologic Features. F. W. Niehaus and W. D. Wright, Omaha—p. 1248.
- Sulfapyridine Overdosage—Antidotal Action of Hypnotics in Animals. Note on Sulfathiazole. R. K. Richards, North Chicago, Ill.—p. 1256.
- Recurrence in Pneumonia: Case Report. J. M. Rueggsegger and Sarah Louise Cockrell, Cincinnati—p. 1262.
- Further Observations on Thrombocytopenia. F. Otenasek and F. C. Lee, Baltimore.—p. 1266.
- Effect of Gold Sodium Thiomalate Administration on Bacteriostatic Properties of Serum in Patients with Rheumatoid Arthritis. E. F. Hartung and Joyce Cotter, New York—p. 1274.
- Treatment of Pneumonia in Rats. Comparative Study of Therapeutic Efficiency of Sulfapyridine and Rabbit Serum, and Combinations of the Two, in Artificially Induced Type I Pneumococcus Infection of Albino Rats. S. H. Spitz, E. H. Loughlin and R. H. Bennett, Brooklyn.—p. 1284.
- Chromophobe Pituitary Adenoma with Simmonds' Disease: Case Report with Autopsy. T. J. Moran, Mayview, Pa., and G. H. Fetterman, Pittsburgh—p. 1289.
- Histopathologic Changes in Myelinated Nerve Fibers Observed by Polarized Light Method Following Artificially Induced Hyperpyrexia. H. M. Weaver, Detroit—p. 1295.
- Effect on Newborn of Vitamin K Administered to Mothers in Labor. J. W. Mull, A. H. Bill and Helen Skowronska, Cleveland—p. 1305.
- Blood Chemistry Observations in Leukemias. E. W. Pernokis and M. R. Freeland, Chicago—p. 1310.
- Determination of Blood Pyruvate in Vitamin B₁ Deficiency. P. K. Li and K. Kato, Chicago—p. 1314.
- Absorption of Nicotine from Cigarette Smoke. I. H. Pierce, Iowa City.—p. 1322.
- Appearance of Blood Bromide After Oral Ingestion. F. B. Flinn, New York—p. 1325.
- Hippuric Acid Liver Function Test. Intravenous Method. E. C. Bartels, Boston—p. 1330.
- Hyperphosphatasemia of Paget's Disease. H. L. Williams and E. M. Watson, London, Ont., Canada—p. 1333.

Journal of Pediatrics, St. Louis

18:567-708 (May) 1941

- Effects of Asphyxia on Newborn Infant. S. H. Clifford, Boston.—p. 567.
- Congenital Megacolon (Hirschsprung's Disease): Report of Case Treated with Acetylcholinomethylcholine Bromide, with Apparent Cure. L. H. Barenberg, D. Greene and L. Greenspan, N. York.—p. 579.
- Antistreptolysin Content of Serums of Normal Infants and Children. J. E. Gordon and J. H. Janney, New York—p. 587.
- Virus Diseases and the Eye in Childhood. G. M. Bruce, New York.—p. 592.
- *Acute Appendicitis and Pseudoappendicitis in Rheumatic Children. A. G. Langmann, New York—p. 599.
- Urinary Excretion of Thiamine in Normal Children. R. A. Benson, C. M. Witzberger and L. B. Slobody, New York—p. 617.
- Favorable End Results in Icterus Gravis Neonatorum. I. P. Sobel, New York—p. 621.
- Skull Fractures in Children and Their Sequelae: Critical Analysis of 285 Cases. M. S. Fox and S. S. Blankstein, Milwaukee—p. 629.
- Osteodystrophia Disseminata. Report of Case. H. W. Thomas, T. N. Meredith and H. L. Wunderly, Pittsburgh—p. 638.
- Arteriosclerosis, Hypertension and Cerebral Atrophy in Infant. M. I. Rubin and M. Rapoport, Philadelphia—p. 643.
- Intraperitoneal Hemorrhage Caused by Strangulation and Rupture of Normal Ovary in 8 Year Old Girl. N. F. Hicken and L. P. Rasmussen, Salt Lake City—p. 652.
- Wound Diphtheria in Newborn Infant Following Circumcision: Report of Case. J. L. Rosenstein, Jersey City, N. J.—p. 657.
- Period of Resistance in Early Childhood. E. Benjamin, Baltimore.—p. 659.

Acute Appendicitis and Pseudoappendicitis.—Langmann states that of 19 rheumatic children admitted to the hospital with the tentative diagnosis of acute appendicitis 10 were subjected to a laparotomy, and acute appendicitis was found in 4 (of minimal degree in 2). In a fifth patient a normal appendix (except for Oxyuris) was removed and no satisfactory explanation for the abdominal signs was found. The remaining 14 instances were considered to be rheumatic pseudoappendicitis. Of the 19 children, 5 gave a history of previous rheumatic episode and had muscle or joint pains at the time of or just before admission. The abdominal symptoms and signs were often not sufficient to differentiate between rheumatic pseudoappendicitis and acute appendicitis. The erythrocyte sedimentation rate should prove of distinct aid in differential diagnosis. Acute appendicitis developed in 2 other children, in 1 in the middle of and in the other toward the end of an acute attack of rheumatic fever. The abnormal appendixes showed no

pathologic changes that were characteristic of rheumatic disease. If after a short period of observation there is a reasonable doubt as to the existence of acute appendicitis, laparotomy should be done. If the condition proves to be rheumatic no harm is done by the operation, whereas procrastination in a case of acute appendicitis may result in death.

Kansas Medical Society Journal, Topeka

42:193-236 (May) 1941

- Spinal Anesthesia in General Surgery: Analysis of 400 Cases. O. R. Clark, Topeka.—p. 195.
Relation of State Board of Health to the Private Medical Practitioner. F. P. Helm, Topeka.—p. 203.
Arthritis—the Great Responsibility and Opportunity. B. L. Wyatt, H. E. Thompson and J. D. Francis, Tucson, Ariz.—p. 207.
Noneffectiveness of Metrazol Therapy in Treatment of Schizophrenia (Dementia Praecox). G. W. Robinson Jr., Kansas City, Mo.—p. 210.
Lymphosarcoma Involving Epidural Space. R. L. Drake, Wichita.—p. 212.

Laryngoscope, St. Louis

51:399-478 (May) 1941

- Progressive Deafness, Otosclerosis and Closely Related Subjects: Abstract of Available Literature Published During Year 1940. J. A. Babbitt and L. E. Silcox, Philadelphia.—p. 399.
Localized Nonsuppurative Encephalitis of Otorhinologic Origin. M. Atkinson, New York.—p. 434.
Nasopharyngeal Tumors: Pathologic Diagnosis of Nasopharyngeal Tumors. A. P. Stout, New York.—p. 446.
Id: Otolaryngologic Aspect. J. W. Babcock, New York.—p. 451.
Id: From Neurologic Viewpoint. S. Brock, New York.—p. 455.
Id: Roentgenologic Aspects. C. G. Dyke, New York.—p. 458.
Id: Roentgenography of Malignant Nasopharyngeal Tumors; Preliminary Report. H. H. Kasabach, New York.—p. 459.
Acute Osteomyelitis of Superior Maxilla in Children: Case Report. H. D. Harlowe, Virginia, Minn.—p. 464.

Maine Medical Association Journal, Portland

32:103-128 (May) 1941

- What Is Wrong with the Teaching of Materia Medica in Medical Schools? A. P. Leighton, Portland.—p. 103.
Acute Intestinal Obstructions: Empyema. J. Homans, Boston.—p. 107.

Medical Annals of District of Columbia, Washington

10:121-162 (April) 1941

- Health and National Defense. N. B. Van Etten, New York.—p. 121.
Digitalis: Its Action and Usage. H. Gold, New York.—p. 127.
Operative Risks in Cardiac Patients. W. S. Love Jr., Baltimore.—p. 134.
Adie's Syndrome in Twins: Preliminary Report. W. H. Hough, Washington, D. C.—p. 137.

10:163-204 (May) 1941

- Electrically Induced Convulsions in Treatment of Functional Mental Disease. D. J. Impastato and R. Almansì, New York.—p. 163.
Symptomatic Relief of Spastic Disabilities with Beta-Erythroidine: Preliminary Report. J. M. Williams, Washington.—p. 171.
Differential Diagnosis of Congenital and Rheumatic Heart Disease in Children. E. F. Bland, Boston.—p. 173.
Sea Nettle. H. G. Hadley, Washington.—p. 178.
Rocky Mountain Spotted Fever: Report of Case Developed Post Partum. V. J. Dardinski, Washington.—p. 181.

Minnesota Medicine, St. Paul

24:293-420 (May) 1941

- Blood Tests to Prove Nonparentage. Report of Special Committee.—p. 315.
Serology of Syphilis and Its Evaluation. F. Rytz, Minneapolis.—p. 321.
Marie's Hereditary Cerebellar Ataxia (Olivopontocerebellar Atrophy). R. C. Gray and C. P. Oliver, Minneapolis.—p. 327.
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- Outbreak of Psittacosis at National Zoological Park, Washington, D. C. T. H. Tomlinson Jr.—p. 1073.
*Quantitative Studies of Tuberculin Reaction: I. Titration of Tuberculin Sensitivity and Its Relation to Tuberculous Infection. M. L. Furcolow, Barbara Hewell, W. E. Nelson and C. E. Palmer.—p. 1082.

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- Responsibility of the Nursing Profession in Industrial Hygiene. J. J. Bloomfield.—p. 1131.
Incidence of Cancer in New Orleans, La., 1937. A. J. McDowell.—p. 1141.

Tuberculin Reaction.—Furcolow and his associates tested members of several different population groups with gradually increasing concentrations of tuberculin. Thus all persons of a particular group were tested initially with an exceedingly dilute concentration of tuberculin, and those who did not react were retested four days later with a more concentrated solution. This procedure was continued step by step until all persons reacted or until the largest dose (ranging from $\frac{1}{400}$ billionth of a milligram to 1 mg. in 0.1 cc. of physiologic solution of sodium chloride) was used. The tests were performed by the intracutaneous method. Institutional groups were studied, as any general population group presents obvious difficulties when repeated testing is necessary. The nontuberculous groups consisted of 553 white children from 6 to 19 years of age residing in an orphanage in Ohio, 200 adults in the institution and 116 infants and young children, residents of two founding homes, ranging in age from birth to 6 years. No roentgen evidence of pulmonary tuberculosis was found in the children of either home. Roentgen studies were not made of the adults of these institutions. The tuberculous and contact groups consisted of 60 children who were patients in a hospital for active tuberculosis, 46 children in a preventorium for inactive cases and children who had had intimate contact with tuberculosis, 101 children in an antituberculosis camp, about 60 per cent of whom had a history of probable contact with active tuberculosis, and the entire adult population (468 white and Negro patients) of a hospital for the treatment of active tuberculosis. The children ranged in age from birth to 14 years and the adults from 15 to 70 years. The clinical diagnoses of the adults varied from minimal to far advanced tuberculosis. Less than 10 per cent of this group were reported to have had a previous tuberculin test. No proved active tuberculosis was found among either the adults or the children of the orphanage. Another group of 499 adults from 15 to 60 years of age, inmates of an institution for the insane, was tested. More than 10 per cent of this group had active tuberculosis and therefore the remaining patients were considered as contacts. The results of the quantitative testing of the 553 children in the orphanage show approximately 20 per cent positive reactions at the level of the usual first testing dose of purified protein derivative, 50 per cent at the level of the second testing dose and 96 per cent at the largest dose, 1 mg. of tuberculin. Family histories of 309 children showed that 61 had a history of contact, and these children were much more sensitive to tuberculin than were those of the entire orphanage group. Conversely, the children who had no history of contact were less sensitive. The positive response to the seventh test dose (one one-hundred thousandth mg. in 0.1 cc. of tuberculin) was 6.5 per cent among the children without a history of contact in contrast to 77 per cent of those with such a history. As to the infants and children of the two founding homes, although there were no reactors to the smaller doses of tuberculin, most of the infants, including those less than 6 months of age, reacted to the larger doses. Sensitivity to tuberculin increased with age; the curve for the children from 4 to 6 years of age approached the curve for children

from 6 to 19 years of age who had no known history of contact. The children (in the tuberculosis and contact groups) in the antituberculosis camp were more sensitive than those of the orphanage group. The children of the preventorium had a higher percentage of reactors to the lower test doses. This sensitivity to the lower doses was even more marked among the children with active tuberculosis, approximately 95 per cent of whom reacted at a level of dosage equivalent to the usual first testing dose of purified protein derivative and all of them reacted at a dosage level five times as concentrated. In contrast, only 20 per cent of the orphanage group and 42 per cent of the children in the antituberculosis camp reacted to this dose. The curves for adults in the tuberculosis and contact groups were similar to the curves for the tuberculous children. This is further evidence that reactions to small doses of tuberculin, or cutaneous hypersensitivity, occur with great regularity in persons with active tuberculosis. The adults were slightly less sensitive than the children; for example, 84 per cent of the adults had reactions to the seventh dose and 99.6 per cent to the eighth as compared to 93 per cent and 100 per cent, respectively, of the children. The 499 patients in the hospital for the insane were not as sensitive to tuberculin as were active cases of tuberculosis but were far more sensitive than the children in the orphanage, none of whom had active tuberculosis.

Radiology, Syracuse, N. Y.

36:391-520 (April) 1941

- Wartime Military Roentgenology. A. A. de Lormier, Washington, D. C.—p. 391
- Medical Preparedness in the Navy, with Special Reference to Radiology. L. Sheldon Jr., Washington, D. C.—p. 404
- Relation of the United States Public Health Service to the Preparedness Program. J. E. Wirth, Bethesda, Md.—p. 409
- Observations Gleaned from Clinical and Radiologic Chest Examinations of Recruits. W. H. McGuffin, Calgary, Alta., Canada—p. 413
- Reminiscences of Roentgenology During the Last War, 1917-1919. Review of 17,000 Examinations and X-Ray Equipment Employed. E. C. Ernst, St. Louis—p. 421
- Roentgen Manifestations of Arteriosclerosis of Branches of Abdominal Aorta with Particular Reference to Calcification of Branches of Celiac Axis. W. W. Fray, Rochester, N. Y.—p. 439
- Intra Abdominal Calcification. Interpretation of Its Roentgenologic Manifestations. J. A. L. McCullough and C. G. Sutherland, Rochester, Minn.—p. 450
- Intra Abdominal Hernia or Intestinal Incarceration. Two Verified Cases Preoperatively Diagnosed. V. W. Archer and G. Cooper Jr., University, Va.—p. 458
- Hepatic Duct Visualization Following Oral Cholecystography. B. Copleman and M. L. Sussman, New York—p. 465
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- Radiobiologic Action and Killing Effects of X-Rays on *Achromobacter Fischeri*. K. P. Lorenz, New York, and P. S. Henshaw, Washington, D. C.—p. 471
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- Recovery of Carbon Monoxide Poisoned Monkeys Under X-Ray Treatment. J. A. Cameron, Columbia, Mo.—p. 486

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- *Roentgen Irradiation of Pelvis in Carcinoma of Cervix Uteri: Present Method. R. S. Stone and J. M. Robinson, San Francisco—p. 521.
- Irradiation in Cancer of Cervix Uteri. S. T. Cantrell, F. Buschke and H. M. Parker, Seattle—p. 534
- Technic of Irradiation of Cancer of Uterine Cervix, Combining Radium and Supervoltage Roentgen Rays. E. Liljencrantz and R. R. Newell, San Francisco—p. 543
- Statistical and Roentgen Analysis of 200 Cases of Bone and Joint Tuberculosis. L. Nathanson and W. Cohen, Brooklyn—p. 550
- Roentgenographic Study of Pleural Effusion. F. J. Rigos, Oak Terrace, Minn.—p. 568
- Megaesophagus (Cardiospasm). Report of Case with Subdiaphragmatic Herniation of Esophagus. R. P. Ball and A. C. Crump, New York—p. 575
- Low Voltage Contact Roentgen Therapy (Chaoul Therapy). L. S. Goin, J. W. Crossan and J. Jellen, Los Angeles—p. 583
- Irradiation of Brain Tumors at Bellevue Hospital 1924-1939. I. I. Kaplan, New York—p. 588
- Pancreatic Tumors. Roentgenologic Study. S. Brown, J. E. McCarthy and A. Fine, Cincinnati—p. 596
- Surgical Aspects of Ruptured Intervertebral Disk, with Particular Reference to Thorotrast Myelography. A. T. Bunts, Cleveland—p. 604
- Investigations into Significance of Sedimentation Reaction as Regards Prognosis of Irradiation of Cancer Patients. P. Jacoby and J. Spotoff, Odense, Denmark—p. 617.

Irradiation of Carcinoma of Cervix.—Stone and Robinson describe their method of treating carcinoma of the uterine cervix and the reasons for the adoption of the new technic. If the lesion is small and well localized, the first treatment with radium is given immediately after the biopsy, to be followed

by the complete course. If the growth is in stage I or stage II (Schmitz) and the patient is a good operative risk, a Wertheim operation is performed. Otherwise a course of roentgen therapy follows the course of radium. If the growth is bulky and extensive, the course of roentgen treatments is given first and then followed in from two to six weeks by radium therapy. The purpose of roentgen therapy first is to decrease the size of the lesion so that radium can be applied more effectively. Radium is the principal medium. The beam of roentgen rays is not aimed at the cervix but at all the probable regions of extension and metastasis. The lymph nodes of from 30 to 50 per cent of patients with "operable" lesions are involved. From 10 to 20 per cent of patients with small local lesions, without parametrial involvement, have metastases in the lymph nodes. Therefore patients with large and small lesions should have roentgen irradiation, unless a radical Wertheim operation is to be performed. About 90 per cent of lymphatic involvement occurs in the primary nodes, which consequently must be included in the regions irradiated. These primary nodes are (1) the hypogastric beside the hypogastric artery just below the bifurcation of the common iliac artery, (2) the obturator on the obturator nerve near the femoral ring, (3) the iliac nodes along the external iliac artery at and below the bifurcation of the common iliac artery, (4) the sacral nodes on the anterior surface of the sacrum and (5) the parametrial nodes, including the ureteral node. Direct extension of the cancer into the parametrium and vagina may occur, and irradiation must include these structures. Accurate aiming of the beam is as important as selecting the cutaneous fields and the amount of radiation to be given. The position of each treatment must be carefully checked by the physician. Technicians should not be given this responsibility. The amount of radiation given should be all that the normal tissues can tolerate. Six fields produce the best internal distribution of the radiation. Five year survivals of patients treated by a combination of radium and roentgen rays from a 200 kilovolt unit indicate that the growth of the cancer growth is retarded or destroyed.

South Carolina Medical Assn. Journal, Greenville

37:109-132 (May) 1941

- Address to House of Delegates. F. H. Lahey, Boston—p. 109
- Thyroidectomy. Review of Experiences and Complications in Doing 125 Thyroidectomies. L. H. McCalla, Greenville—p. 114

Southern Medical Journal, Birmingham, Ala.

34:453-558 (May) 1941. Partial Index

- Studies and Uses of Stored Blood and Plasma. R. O. Muether and K. R. Andrews, St. Louis—p. 453
- *Chronic Ulcerative Colitis. Special Considerations of Its Treatment. F. W. Rankin and C. C. Johnston, Lexington, Ky.—p. 464
- Duodenal Obstruction. Unusual Types. R. W. Kelley, St. Louis—p. 471.
- *Radical Operation for Severe Varicose Veins and Varicose Ulcer. H. Mahorner, New Orleans—p. 478
- Chorionepithelioma. Diagnostic and Therapeutic Difficulties: Critical Analysis of Fifteen Suspected Cases. E. C. Smith and D. W. Goldman, New Orleans—p. 486
- Changes Occurring in Urinary Tract in Pregnancy and Their Sequelae. J. A. Bowen and J. R. Stites, Louisville, Ky.—p. 494.
- Comparison of Sulfapyridine and Sulfathiazole in Treatment of Pneumonia. J. M. Kusman and J. W. Moore, Louisville, Ky.—p. 497.
- Chemotherapy of Bacillary Dysentery. S. T. Ravenel, Greensboro, N. C., and D. L. Smith Sr., Spartanburg, S. C.—p. 504.
- Recent Advances in Diagnosis and Treatment of Tularemia. Emma S. Moss and J. O. Weilbaecher Jr., New Orleans—p. 512
- Abuses of Nasal Medication. B. J. McMahon, St. Louis—p. 524
- Gastrointestinal Allergy. Proctoscopic Observation. J. W. Thomas and R. J. F. Renshaw, Cleveland—p. 528
- Early Diagnosis of Carcinoma of Colon. P. R. Imes, Louisville, Ky.—p. 538.
- Role of Hamstrings in Production of Postural Changes. Possible Connection Between Contracted Hamstrings and Low Back Conditions and So-Called Epiphysitis of Spine. T. Wheelton, Richmond, Va.—p. 540.
- Pollution of the Ohio River. H. R. Leavell, Louisville, Ky.—p. 547.

Chronic Ulcerative Colitis.—Rankin and Johnston point out that, since ulcerative colitis may be initiated or an exacerbation may follow infection of the upper part of the respiratory tract or any disease, trauma or local irritation, the presence of the offending organism as part of the intestinal flora, dangerous only in the face of some physiologic abnormality, is suggested. The disease may superimpose itself on the damaging effects of a dysentery or on the result of some injurious irritant or trauma.

Usually (in 95 per cent) the disease begins in the rectum and progresses upward across the transverse colon, often reaching the cecum. Segmental involvement is observed in about 5 per cent of cases. If proliferation and repair fail to keep pace with tissue necrosis and destruction, perforation resulting in generalized peritonitis or localized abscess formation follows. The diagnosis of ulcerative colitis is rarely difficult except in the earliest phase of the disease before the general grayish yellow appearance of the patient, progressive increase in the number of daily stools and digital, proctoscopic and roentgen signs have become established. Treatment is primarily medical, but about 15 per cent of patients present complications for which immediate surgical intervention is indicated. The first group consists of perforation, hemorrhage, abscess or fistula formation, acute fulminating disease and acute intestinal obstruction, and the second group comprises advanced visceral degeneration and infection, polyposis and malignant degeneration. Chemotherapy and continuous duodenal drainage have altered the original conception of treating perforation so that now the method advised by Ochsner in the treatment of appendical peritonitis seems often advisable. The indirect surgical attack has no place in the treatment of hemorrhage. Abscess formation, whether abdominal or perirectal, should be drained surgically. Conservatism must be predominant. For the acute fulminating case surgical drainage, ileostomy, has been urged. Surgical decompression is the only means to relieve intestinal obstruction. Elective surgical intervention is reserved for those patients for whom sepsis, polyposis or malignant disease endanger life. The condition of patients with malignant disease and polyps indicating resection is usually better than that of those with visceral degeneration and sepsis. Rehabilitation is therefore less difficult and will require a shorter interval. Ileostomy is the most simple and satisfactory procedure for deflecting the fecal stream as a therapeutic measure or as an initial step in the radical removal of the large intestine. When further surgical intervention is considered, a sufficient length of time must be permitted for adequate rehabilitation. If colectomy is advised, the time element should depend entirely on the patient's surgical tolerance. Colectomy, exteriorization of that part of the involved colon, ileocolostomy and ileosigmoidostomy have no guaranty of retarding the disease and must be reserved for only a few carefully selected cases. Colectomy is a formidable procedure. The single right McBurney ileostomy with the inverted distal stump dropped into the abdomen will greatly simplify this procedure and minimize wound infection or peritonitis. For 20 patients multiple stage procedures have been used with 1 exception. Following operation this patient suffered a dehiscence of his wound and died in the second week from peritonitis. One other patient died from a pulmonary embolism following a graded colectomy. An adequate period of readjustment following ileostomy cannot be too strongly emphasized. The 19 patients underwent forty-three operations, and all of them recovered and have had a satisfactory convalescence.

Radical Operation for Varicose Veins and Ulcer.—There is no unanimity of opinion regarding the treatment of severe varicose veins and varicosities complicated by leg ulcers. Mahorner outlines a radical operative procedure for these cases which consists of excision of a lenticular area of subcutaneous tissue containing the varicosities and the deep fascia, exposing the muscles and thus tying all communicating veins in this area. When pigmentation or subcutaneous scarring is heavy or when the ulcer does not heal because of subcutaneous scarring, such areas are excised down to the muscle, and a split skin graft is used to replace it. In certain cases of severe varicose veins it is essential not only to ligate the saphenous and its tributaries high at the fossa ovalis but also to resect segments in the lower third of the thigh or upper third of the leg. The radical operation is indicated for the most severe type of varicose veins with ulcers due to multiple leaks from the deep to the superficial veins through communicating veins in the leg. The author emphasizes the point that the static pressure is the same in varicose as in normal veins but that the kinetic pressure or pressure in the actively moving extremity is much less in normal veins than in varicose veins. The

Trendelenburg test and its doubly positive reaction may indicate whether the retrograde flow in varicose veins occurs through communicating veins and the main opening of the saphenous, but it does not localize the leaking communicating veins. It gives the information that the incompetent communicating veins are somewhere below the main opening of the saphenous, but the Mahorner-Ochsner test definitely localizes the level of the leaks in the communicating veins and it can thus be of great value in indicating the operative procedure essential for the disturbed physiologic function in severe varicose veins and ulcers.

Southwestern Medicine, El Paso, Texas

25:67-102 (March) 1941

- Role of the General Practitioner in the Cure of Cancer. F. S. Wetherell, Syracuse, N. Y.—p. 67.
- Treatment of Ununited Fractures of Neck of Femur. W. C. Campbell and H. Smith, Memphis, Tenn.—p. 70.
- Partial Gastrectomy in Certain Cases of Duodenal Cancer. V. C. Hunt, Los Angeles.—p. 73.
- Some Indications and Contraindications in Commonly Used Anesthetic Agents. T. H. Seldon and J. S. Lundy, Rochester, Minn.—p. 77.
- Injuries to Clavicle: Report of Two Cases. D. Cameron and F. C. Goodwin, El Paso, Texas.—p. 79.
- Abdominal Actinomycosis: Case Report. T. W. Woodman, Phoenix, Ariz.—p. 81.

25:103-132 (April) 1941

- Unity in Medicine. W. P. Holbrook, Tucson, Ariz.—p. 103.
- Ectopic Pregnancy. H. J. Goubeaud, H. Klein and A. Katz, Brooklyn.—p. 105.
- Chagas' Disease (Does It Exist in Men in Arizona?). S. F. Wood, Los Angeles.—p. 112.
- Otitis Media in Childhood. W. E. Vandever and M. P. Spearman, El Paso, Texas.—p. 114.
- Normal Blood Counts of Mexican Children of Tucson, Ariz. E. L. Breazeale and R. A. Greene, Tucson, Ariz.—p. 116.
- Regional Ileitis: Case Report. J. L. Green and H. H. Varner, El Paso, Texas.—p. 117.

Surgery, Gynecology and Obstetrics, Chicago

72:823-950 (May) 1941

- Observations on Pathology of Experimental Traumatic Shock. J. E. Dunphy, J. G. Gibson 2d, Boston, and J. L. Keeley, New Orleans.—p. 823.
- McClure-Aldrich Test in Water Balance. D. S. MacIntyre, S. Pedersen and W. G. Maddock, Ann Arbor, Mich.—p. 834.
- Venous Circulation in Lower Extremities During Pregnancy. J. R. Veal and H. H. Hussey, Washington, D. C.—p. 841.
- Persistence of Function of Skin Grafts Through Long Periods of Growth. J. B. Brown and F. McDowell, St. Louis.—p. 848.
- Effect of Partial Obstruction of Common Bile Duct. N. W. Thiessen and R. F. Hanzal, Cleveland.—p. 854.
- *Efficacy of Phenol and Tetanus Antitoxin in Treatment of Experimental Tetanus. W. D. Thompson Jr. and L. Friedman, Philadelphia.—p. 860.
- *Eclampsia and Postclamptic Hypertension: Follow-Up Study with Analysis of Factors Affecting Remote Prognosis. L. C. Chesley and W. H. Somers, Jersey City, N. J.—p. 872.
- *Study of Clinical Manifestations and Results of Treatment of Twenty-Two Patients with Raynaud's Symptoms. C. A. Johnson, Chicago.—p. 889.
- *Mucinous Carcinoma of Breast. O. Saphir, Chicago.—p. 908.
- Accuracy of Roentgen Estimates of Pelvic and Fetal Diameters. A. L. Dippel and E. Delfs, Baltimore.—p. 915.
- Constrictive Occlusion of Superior Vena Cava: Report of Three Cases in Which Patients Were Treated Surgically. H. K. Gray and I. C. Skinner, Rochester, Minn.—p. 923.
- Suspension Laryngoscopy in Treatment of Malignant Disease of Hypopharynx and Larynx. G. B. New and H. E.orton, Rochester, Minn.—p. 930.
- Demonstration of Mycobacterium Tuberculosis in Anorectal Abscess. J. E. Pottenger and F. M. Pottenger Jr., Monrovia, Calif.—p. 936.
- Phenol and Tetanus Antitoxin in Experimental Tetanus.**—Thompson and Friedman carried out controlled experiments on dogs in an attempt to determine the value of phenol alone or combined with antitoxin. The method advocated by Suvansa was investigated and the authors assumed that his maximal dose of 40 cc. was for treating a young, well developed man of 150 pounds with a severe case of tetanus. From this they deduced the intrathecal dose of 0.57 cc. per kilogram of body weight of a 1:400 phenol solution in physiologic solution of sodium chloride. They desired to use a dose of tetanus toxin that would kill the dog regardless of the amount

of tetanus antitoxin administered. Abel and Chalian found that if 100 dog lethal doses of tetanus toxin was injected intravenously and that if six hours elapsed, no amount of antitoxin could save the animal. This amount was used, since the authors felt that by so doing they could tell whether phenol alone or with tetanus antitoxin was of any benefit in extreme tetanus. Experiments show that the intrathecal administration of phenol to dogs given intravenously 100 lethal doses of a tetanus toxin known to kill healthy dogs within twenty-five to twenty-six hours will not prevent the animal's death. Their death seemed to be hastened by the additional damage to the central nervous system or by the lowered resistance to distemper which phenol apparently produces. However, the administration of tetanus antitoxin in sufficient amounts saves dogs when given within six hours of a similar dose of toxin. The lethal dose for dogs of a 1 per cent solution of phenol was found to lie between 0.3 and 0.35 Gm. per kilogram of body weight when given intravenously. The damage to the kidneys and liver was directly proportional to the amount of phenol given. The 1 per cent solution of phenol given intravenously and simultaneously with 100 dog lethal doses of tetanus toxin through opposite veins did not alter the progress of the tetanus, and the bioassays did not reveal any detoxifying effect of the phenol. If the phenol in the dosage used was given simultaneously with 10 dog lethal doses of tetanus toxin through opposite veins, it still did not alter the progress of the tetanus and neither did the bioassays reveal any detoxifying effect of the phenol. The authors point out that the common preservatives used in tetanus antitoxin are definite irritants to the central nervous system and that tetanus antitoxin containing these preservatives should not be used intrathecally in the treatment of tetanus. Dogs given 100 dog lethal doses of tetanus toxin intravenously were saved when they were given at six hours from one hundred and eighty-two to two hundred times the neutralizing dose of tetanus antitoxin. Dogs given 100 dog lethal doses of tetanus toxin were saved when they were given at seven hours three hundred times the neutralizing dose of tetanus antitoxin, although signs of tetanus developed. Evidently in seven hours a portion of the toxin was so irreversibly fixed that it could not be neutralized by the antitoxin.

Eclampsia and Post eclamptic Hypertension.—Chesley and Somers present a follow-up study of 167 eclamptic women encountered among 42,476 deliveries at the Margaret Hague Maternity Hospital. Of these, 20 are known to be dead, 141 were reexamined in 1940, and an additional 4 had been followed for at least a year before they were lost track of. Only 2 patients have had no follow-up. There were 12 immediate maternal deaths. The maternal mortality among the 114 primiparas, who made up 68 per cent of the cases, was 4.4 per cent and among the 55 multiparas it was 12.7 per cent. The total loss of babies (abortions, stillbirths, neonatal deaths and undelivered babies of mothers dying of antepartum eclampsia) was 33.5 per cent. There were 8 sets of twins; 2 women were admitted twice, giving 177 babies. Of these 118 were discharged alive, 47 were stillborn and 12 were neonatal deaths. As the pregnancy progresses and the fetus becomes larger, the rate of survival increases. Much of the adverse effect of eclampsia on the baby seems to lie in premature delivery. Yet most of the deaths are not neonatal deaths; the majority, 79.6 per cent, of the babies lost are stillborn. Hence it seems that, the older the fetus, the more resistant it is to whatever intrauterine factor is so often lethal. Of 144 babies born after the thirty-fifth week of gestation 28, or 19.4 per cent, were stillborn. Of the 116 born alive 4, or 3.45 per cent, died. Assuming the death rate to remain constant, delivery at the thirty-fifth week would have saved 23 infants if the eclampsia could have been foreseen. In an analysis of the results of carrying a toxic patient to secure an older and heavier baby with consequent lower neonatal mortality, it appears that when delivery is delayed more than three days after the first convulsion 57.2 per cent of the fetuses die in utero; delivery within three days shows a stillbirth rate of 25.8 per cent. In postpartum eclampsia only 2.2 per cent of the fetuses are stillborn. The duration of toxemia, regardless of the time of convulsions, has a definite effect on fetal survival, the death rate increasing as the toxemia

is prolonged. Of 29 patients carried for more than four weeks with toxemia, 62 per cent failed to have living babies. The degree of prematurity also played a part. The fetal mortality increases with the severity of the toxemia. The mortality rate rises as the blood pressure or proteinuria increases. The relation between the number of convulsions and fetal death is nearly linear. There were 8 remote deaths; 1 was caused by a septic abortion eighteen months after the eclamptic pregnancy, 2 by pulmonary tuberculosis at respectively four and one-half months and three and one-half years post partum, and 5 died of cardiovascular causes from seven months to three and a half years after the eclamptic delivery. None of these 8 remote deaths occurred in private patients. At follow-up (from one to eight years) the incidence of hypertension among the 147 surviving women was 17.5 per cent. This is significantly greater than that among the general female population, after correction is made for age distributions. The incidence of proteinuria of significant degree was 2.6 per cent at follow-up. Renal function, as measured by the urea clearance and urinary specific gravity, was in the normal range in at least 97 per cent of the patients at follow-up. The majority of the living hypertensive women had significant eyeground changes, half had cardiac enlargement and 8 had signs and symptoms of cardiac insufficiency. Analysis of factors contributing to the persistence of hypertension shows that in general high blood pressure is more likely to be found at follow-up if there are antecedent renal or vascular disease, high blood pressure in pregnancy, advanced age of the patient, many previous children, and the eclampsia and obesity long and severe. Not one of these factors is so decisive in conditioning remote hypertension as is recurring toxemia subsequent to the eclampsia. The recurrent rate of toxemia in pregnancies after eclampsia was found to be 47 per cent. The foregoing factors which favor the persistence of hypertension favor in even greater degree the recurrence of toxemia. Advising a post eclamptic patient against future pregnancies would seem to be justified by the recurrent rate of toxemia, with a consequent eightfold potential increase in permanent hypertension if the pregnancy is toxic.

Raynaud's Symptoms.—Johnson presents the histories, physical and laboratory observations, treatment and course of 22 patients with Raynaud's symptoms. All the patients presented Raynaud's symptoms in the fingers, and 11 had similar symptoms in the toes, but in no case did the symptoms occur in the toes without the fingers being affected. In only 3 instances were emotional upsets a frequent cause, and in these surgery on the sympathetic failed to produce any improvement as judged by recurrence and frequency and severity of attacks. Associated diseases were comparatively common: 2 patients had syphilis, 13 a mild secondary anemia, 2 a severe anemia, 3 stiffness of the finger joints, scleroderma, ulcers, loss of tissue, and loss of fingernails and 2 had sclerodactylia. Treatment consists of relief of mental anxiety, improvement of anemia, treatment of any specific disease and surgical treatment by operations on the sympathetic nervous system. The main reasons for the apparent lack of progress in knowledge of the symptom complex of Raynaud's disease are (1) differences of opinion as to whether Raynaud's disease exists as a clinical entity, (2) failure to understand the nature of the vascular changes and (3) differences of opinion regarding treatment. Certain data from the present study throw light on the nature of the vascular changes during attacks and further bear out the opinion that the changes observed in the extremities are merely symptoms of some more fundamental disease. The study does not completely bear out the generally accepted view that blanching of fingers or toes during an attack is caused by active peripheral vascular constriction. The blanching may be caused in part by a vasodilatation in the palmar arch and a passive collapse of the vessels in the fingers from an inadequate amount of blood and blood pressure to keep them open; that is, the blood may be shunted into the palmar arch without going through the fingers. The common association with other diseases presents two questions which can be only partially answered: 1. The treatment of the mild or severe anemia resulted in improvement in all. The degree of improvement varied from

slight to almost complete relief from attacks. The effects of antisiphilic treatment could not be observed in 1 patient because he did not remain under observation; in the other, who also had scleroderma and selerodactylia, complete relief from the Raynaud symptoms and great improvement in the scleroderma followed antisiphilic treatment. 2. The organic vascular disease varied from mild organic peripheral changes to severe cardiovascular disease with decompensation, and the results indicate that it and the Raynaud symptoms have a common etiology. The treatment of Raynaud's syndrome varies with the individual circumstances of each patient. In the author's 22 patients surgery of the sympathetic nervous system was a therapeutic failure but medical management gave considerable relief to a number of patients. In from twelve to thirty-five days after surgical intervention on the sympathetic nervous system the circulation returns to the preoperative level, but the cutaneous temperature remains elevated and the absence of sweating persists. This occurs in the apparent absence of the sympathetic vasoconstrictor tone. Following the so-called preganglionic sympathectomy to the upper extremity as done by White the circulatory and thermal effects were transitory; it is doubtful that they lasted longer than the traumatic effects of the operation. Vasodilatation in the fingers could be produced following recovery from surgery by local heat or median nerve block indicating the presence of nerves with vasomotor function. The importance of recognizing Raynaud's symptoms as part of some other disease cannot be overlooked. It would seem logical to direct attention to the recognition and treatment of Raynaud's symptoms as part of some other disease rather than to Raynaud's disease alone, which must be extremely rare if it exists at all.

Mucinous Carcinoma of Breast.—Saphir states that mucinous carcinoma of the breast is not a single entity but that it presents at least four definite types of tumor: 1. The true mucinous carcinoma, which consists of duct or cystic structures filled with mucinous material in which groups of, or isolated, tumor cells may still be recognizable. There are no other tumor structures present. This is apparently a rare tumor and is relatively benign. The original conception of the benignity of mucinous tumors is to be traced to this type. 2. Duct carcinoma with mucinous features, which is the most common type. Areas similar to those seen in true mucinous carcinoma are intermingled with duct carcinomatous structures. Sometimes the latter portions are seen only after sections of the whole breast have been examined. The tumors are just as malignant as simple duct carcinomas. 3. The signet ring cell mucinous carcinoma, characterized microscopically by well preserved mucin secreting cells with basophilic or clear cytoplasm and crescent shaped, compressed nuclei situated at the base of the cells. The signet ring tumor cells remain intact. Soon they become isolated from the ducts and acini, invade the stroma and may produce the most widespread metastases, particularly in the ovaries. Though duct carcinomatous structures may also be present in this variety, the metastases consist mostly of signet ring shaped cancer cells. This tumor is regarded as highly malignant. Two patients died from widespread metastases soon after the detection of the primary tumor. Yet 1 patient is alive four years after operation. 4. Intracystic papilloma with mucinous features. This is a relatively rare, nonmalignant tumor. Only 1 such tumor was observed. Grossly it consisted of a cyst measuring about 4 cm. in greatest dimension, which was filled with a hemorrhagic and mucinous material in which small, yellowish pieces of soft, granular tissue were loosely intermingled. The inner wall of the cyst presented a rather soft and friable, velvety, broadly attached tumor composed of many well circumscribed, small or minute excrescences covered and separated from one another by mucinous material. Microscopically the tumor consisted of round, oval and, more often, spindle shaped epithelial cells resembling transitional cells of the urinary tract and an insignificant, thin, connective tissue stalk. These cells were covered by a mucinous material. Because of the spindle shaped cells the tumor could be classified as a transitional type of intracystic papilloma.

West Virginia Medical Journal, Charleston

37:241-288 (June) 1941

The Physician in the Changing Order. R. K. Buford, Charleston.—p. 241.

*Meningitis Due to Salmonella Supestifer: Case Report. G. M. Lyon and T. G. Folsom, Huntington.—p. 249.

Diagnosis and Treatment of Hyperthyroidism. G. Crile Jr., Cleveland.—p. 255.

Accessory Factors Concerned in Diagnosis of Heart Disease. C. S. Duncan, Huntington.—p. 261.

Tic Douloureux: Two Cases. W. S. Robertson, Charleston.—p. 264.

Renal Complications Following Sulfapyridine and Sulfathiazole Therapy in Pneumonia. L. W. Hewitt, Bluefield.—p. 265.

Meningitis Due to Salmonella Supestifer.—Lyon and Folsom report a case of meningitis due to an unusual small motile gram-negative rod treated with sulfanilamide. Two weeks before admission the patient, a boy 2½ years of age, became suddenly ill with fever, vomiting, malaise and diarrhea. From the parents it was learned that there had been a considerable amount of raw pork in their kitchen for two or three weeks preceding the apparent onset of his illness. There is much reason to believe that the meningitis and bacilluria were caused by one of the Salmonella group, probably Salmonella supestifer (the bacillus of hog cholera) rather than Salmonella schottmülleri (bacillus paratyphoid B). Salmonella supestifer infections in man occur infrequently or else they are not recognized. The young seem to be more frequently affected, and while in them the infections are believed to be mild the most severe form is also encountered in the very young. With all the Salmonella contaminated raw pork sold and taken into homes there have been relatively few illnesses traceable to Salmonella supestifer. This can best be explained on the basis of (1) its low pathogenicity for man and (2) the failure to suspect the real causal agent. More careful bacteriologic study of the gram-negative bacilli encountered clinically would probably show a larger incidence of these infections than is generally recognized. Just what role sulfanilamide played in the management and recovery of their patient is not clear. It is possible that the patient may have recovered spontaneously. However, it is the authors' impression that the drug was directly responsible for the recovery. They also believe that relatively high blood and cerebrospinal fluid levels are required, as their patient did better clinically on high levels (from 18 to 24 mg. per hundred cubic centimeters) than on levels from 12 to 18 mg. per hundred cubic centimeters. He also did better on combined oral and intrathecal administration than on oral therapy alone. At no time was there any significant evidence of toxicity other than a grayish discoloration of the skin. The authors know of no similar instance in which a meningitis and a bacilluria caused by a motile gram-negative bacillus was treated with sulfanilamide. Cultures were taken directly from the puncture needle into nutrient broth. After from forty-eight to seventy-two hours a gram-negative bacillus possessing motility was observed. The bacilli were not agglutinated by serums which agglutinated the typhoid bacillus (Eberthella typhi), the Flexner dysentery bacillus (Eberthella paradysenteriae) the bacillus of paratyphoid A (Salmonella paratyphi) or the bacillus of paratyphoid B (Salmonella schottmülleri Sciffert). In spite of the fact that the small gram-negative bacillus did not regularly satisfy all the cultural and fermentation characteristics of Salmonella supestifer, it seemed, from purely bacteriologic grounds alone, that the organism belonged more nearly to the Salmonella group than to any other. The finding of this motile gram-negative bacillus in cerebrospinal fluid and in the urine is of particular interest. Broth cultures from the blood gave no certain evidence of a bacillemia, although they were not taken until relatively late in the clinical course and after chemotherapy was instituted.

Wisconsin Medical Journal, Madison

40:361-460 (May) 1941

Industrial Dermatitis. H. R. Foerster, Milwaukee.—p. 377.

Impetigo Contagiosa: Streptococci and Staphylococci Varieties and Their Management. S. Epstein, Marshfield.—p. 383.

Treatment of Burns. A. A. Schaefer, Milwaukee.—p. 391.

Problem of Squint in Young Children. E. E. Neff, Madison.—p. 394.

Prophylactic Use of "Cold Capsules." A. A. Holbrook, Milwaukee.—p. 396.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London
53:127-170 (May) 1941

Dermatitis Caused by Insecticidal Pyrethrum Flowers (*Chrysanthemum Cinerariifolium*). J. T. Martin and K. H. C. Hesler.—p. 127.
"Prurigo Annularis." J. H. T. Davies.—p. 143.

British Journal of Ophthalmology, London
25:189-240 (May) 1941

Measurement of Heterophoria. N. Cridland.—p. 189.
Surgical Cure of Unusual Detachment of Retina. E. C. Zorab.—p. 229.
New Dark Adaptation Tester. S. Yudkin.—p. 231.

British Medical Journal, London
1:545-578 (April 12) 1941

Effort Syndrome in Soldiers. J. Parkinson.—p. 545.
Clinical Investigation of Shock. A. C. Kanaar.—p. 549.
Sarcoidosis: Some Speculations as to Stages of Infection in General. G. E. Lewis.—p. 552.
Outbreak of Acute Gastroenteritis Among Troops in Large Training Area: Preliminary Report. A. H. D. Smith and D. J. Davies.—p. 554.
Repair of Lacerated Eyes. R. L. Rea.—p. 555.

1:579-616 (April 19) 1941

*Prothrombin Deficiency in Disease of Liver and Bile Passages and Its Treatment with Synthetic Vitamin K. J. Reid.—p. 579.
Experiences in Reception and Treatment of Air Raid Casualties. J. R. Lee.—p. 584.
Renal Complications of Sulfapyridine: Account of Case Which Showed Gross Hematuria and Uremia. J. C. Leedham-Green.—p. 586.
Experiments in Treatment of Peripheral Nerve Injuries with Annioplastin. L. Rogers.—p. 587.
A History of the Rescue and After-Care of Two Cases After Four Days' Burial. G. S. Swan.—p. 589.

Vitamin K in Hepatic and Biliary Diseases.—Reid studied the prothrombin deficiency and hemorrhage in 35 patients with obstructive jaundice, biliary fistula, catarrhal jaundice or cirrhosis of the liver. Definite prothrombin deficiency was found in 16 patients, and these were treated with synthetic naphthoquinone preparations; 8 received 2-methyl-1:4-naphthoquinone (menadione) in peanut oil by intramuscular injection, and 8 were given 2-methyl-1:4-naphthohydroquinone disuccinate intravenously. Prothrombin estimations were carried out for three to five days before and for seven to ten days after treatment. There were 15 patients with obstructive jaundice due to neoplasm. Their prothrombin index before operation ranged from 31 to 100 per cent, average 65 per cent. The patients were all receiving satisfactory diets; hence deficient absorption of vitamin K appears to be the main cause of a low prothrombin level in obstructive jaundice and biliary fistula. After operation much prothrombin deficiency was encountered in association with much slighter degrees of obstructive jaundice. In 7 a pronounced prothrombin deficiency developed from the second to the sixth day, the prothrombin index being reduced from 5 to 25 per cent in the first twenty-four hours and from 20 to 50 per cent between the second and the sixth day. These 7 patients responded immediately to treatment with naphthoquinone and the prothrombin index rapidly returned to normal; hence liver damage, while it may be a contributory factor, does not play an important part in postoperative deficiency. It appears that a deficient intake of vitamin K (green vegetables were not taken for at least a week after operation) may be important in causing the pronounced postoperative fall in the prothrombin index. Of the 8 patients with nonmalignant obstructive jaundice, all were slightly jaundiced. Before operation the prothrombin index was never below 75 per cent; 6 were operated on. In 4 the prothrombin index ranged between 75 and 80 per cent in the first two postoperative days; thereafter normal values were found. In another patient it fell to 57 per cent on the fourth day and in the sixth patient it fell to 25 per cent after one week, when hemorrhage from the wound was observed. The prothrombin index of the 6 patients with catarrhal jaundice was never below 90 per cent and the plasma

bilirubin was 5 and 10 mg. per hundred cubic centimeters respectively in the 2 patients with the mild form of the disease. In the 3 patients with moderate attacks the lowest prothrombin indexes were 80, 72 and 65 per cent and the plasma bilirubin was 18, 9 and 7 mg., respectively. The prothrombin index was 20 per cent and the plasma bilirubin 35 mg. at the height of the disease in the patient with severe clinical manifestations. The amount of prothrombin in the 4 patients with cirrhosis of the liver was always moderately reduced; the index ranged from 65 to 80 per cent. On an ordinary mixed diet the level fluctuated between these figures. Normal values were never reached, and there was practically no response to synthetic vitamin K. From a study of the 3 patients with obstructive jaundice followed by postoperative hemorrhage the author concludes that prothrombin deficiency is not, even when severe, always associated with hemorrhage. It is considered responsible only for prolonging hemorrhage after it has been caused by other factors, especially injury. The water soluble preparation 2-methyl-1:4-naphthohydroquinone disuccinate, injected intravenously, has been found as efficient as menadione in increasing blood prothrombin. The action of the first preparation appears to be more rapid though less sustained than the latter. Its disadvantage is that it is not stable and must be dissolved in water immediately before use. A close analogy between hemorrhage in jaundice and hemophilia is made. In both an upset in the coagulation mechanism exists, in the one it is due to prothrombin deficiency and in the other to an unknown congenital defect.

Journal of Laryngology and Otology, London
56:35-80 (Feb.) 1941

Bleeding from Ear as Sign of Leaking Aneurysm of Extracranial Portion of Internal Carotid Artery. N. Young.—p. 35.

Lancet, London

1:529-560 (April 26) 1941

Lymphatic Pathway for Absorption from Nasopharynx. J. M. Yoffey.—p. 529.
Effort Syndrome. E. Wittkower, T. F. Rodger and A. T. M. Wilson.—p. 531.
Rejection of Psychiatrically Unfit Recruits. H. Stalker.—p. 535.
Separation of Serum in Bulk. G. A. Harrison and L. E. R. Picken.—p. 536.
Closed Technique for Fixation of Fractured Carpal Scaphoid. J. R. Armstrong.—p. 537.
*Immunity Reactions After Ultraviolet Irradiation of Skin. A. Eidinow.—p. 540.

Reactions After Ultraviolet Irradiation.—Eidinow studied local reactions and specific immunity response when a standard quantity of antigen (hay pollen toxin or T. A. B. vaccine) was injected intradermally into areas of normal skin of 14 patients and their skin was irradiated with ultraviolet rays. He observed that exposure of the skin to ultraviolet radiation diminishes the local reaction normally produced in allergic patients by scarification and the application of hay pollen toxin. Intradermal injections of hay pollen toxin into an area of irradiated and erythematous skin of allergic patients excites violent symptoms and signs of hay fever or asthma with collapse. Intradermal injections of T. A. B. vaccine into areas of skin rendered erythematous by ultraviolet rays will provoke an agglutinin (H and O groups) titer in the blood serum more than ten times as great as a similar intradermal injection into areas of normal skin. The erythema reaction following exposure of the skin to ultraviolet rays may thus be used to increase local and general immunity.

1:561-592 (May 3) 1941

*Sciatica. J. H. Kellgren.—p. 561.
Absorption of Isoagglutinins from Pooled Plasma or Serum. B. L. Della Vida and S. C. Dyke.—p. 564.
Peptic Ulcer in the Royal Navy: Symptoms and Pathology. R. S. Allison and A. R. Thomas.—p. 565.
Prevention of Experimental Fibroids by Cortical Hormone. A. Lipschütz and L. Vargas Jr.—p. 568.
*Composition of Diphtheria Antitoxic Serums. R. A. Kekwick, B. C. J. G. Knight, M. G. Macfarlane and B. R. Record.—p. 571.

Sciatica.—Kellgren describes a clinical examination which facilitates diagnosis of sciatica. The first point to consider is the distribution of the deep pain and tenderness. The patient is asked to map out roughly the distribution of his deep pain and tenderness. From this information the segmental innervation of

the source of pain, whether superficial or deep, can be determined. The movements of the knee, hip, sacroiliac joints and lumbosacral spine are examined. The appropriate region is carefully palpated for a painful structure, and after it has been defined it is explored with a needle point, when the full spontaneous pain should be reproduced. The painful structure is infiltrated with 2 per cent procaine hydrochloride and in favorable cases the symptoms and signs may be completely abolished; more usually they are only much relieved, as it is rarely possible to anesthetize deep-lying structures. Deep-seated painful structures, such as an interspinous ligament or ligamentum flavum, can be reached with the exploring needle. In the few patients with pain in the lumbosacral spine in which the exploring needle fails to reveal any painful structure it is probable that the source of pain lies inside the spinal canal, and displacement of an intervertebral disk is to be suspected. In cases in which there are clear signs of an intraspinal source of pain but no evidence of nerve involvement, the source of pain is probably the posterior common ligament. More often there is some evidence of pressure on a nerve root; thus an area of cutaneous pain may be added to the area of deep pain. The earliest signs of nerve pressure will be periods of numbness, recovering with tingling but without detectable sensory loss. The next stage consists of hyperalgesia combined with loss of light touch, then loss of all sensation except delayed pain and finally complete sensory loss. These sensory changes are distributed over the dermatome corresponding to the root or roots pressed on, and they form the most reliable evidence of nerve involvement. Muscular paralysis is of value only when it is severe. The ankle jerk is of more value, but it may be absent in cases of simple referred pain distributed over the first sacral segment. Of the author's 70 patients, 50 suffered from ligamentous and muscular lesions; in only 22 of these was any change in the underlying bones and joints revealed in roentgenograms. Of 15 patients with displacement of an intervertebral disk, 13 showed evidence of root pressure and in 2 the pain resulted from a disturbance of the posterior common ligament. The pain of the remaining 5 with nerve involvement resulted from miscellaneous nervous diseases. In no case could the symptoms and signs be ascribed to an interstitial neuritis of the sciatic nerve.

Diphtheria Antitoxic Serums.—According to Kekwick and his associates, examination of diphtheria antitoxic horse serums by electrophoretic analysis has shown that of the three separable globulin components, two, the β (beta) and γ (gamma) fractions, have antitoxic activity. Both these proteins are specific antibodies to the classic diphtheria toxin, prepared with a Park-Williams 8 strain, in that they neutralize this toxin in the usual animal test for potency ($L+$) and flocculate with the toxin in a balanced mixture (Lf). There are striking differences between the two antitoxins as shown by the flocculation times, the *in vivo/in vitro* ($L+ / Lf$) ratios and the empiric composition of the floccules. The relative and absolute amounts of the β and γ antitoxins altered during the course of immunization in horses. Initially the amount of γ antitoxin increased more rapidly than the β antitoxin but soon reached a steady value. The β antitoxin of the serum increased more slowly to a much higher maximal value and contributed the major portion of the total unitage obtained at the end of the course of immunization. There may be a correlation between the avidity of a serum and the relative proportion of γ antitoxin present. The γ globulin (containing the γ antitoxin) is precipitated at lower salt concentrations than the β globulin and thus tends to be precipitated in the "euglobulin" fraction in the classic salting-out method of serum concentration. The γ antitoxin appears in large measure to be lost in the "pepsin process" of serum concentration, the product there being probably a modified β globulin. Early bleedings during a course of immunization, late bleedings, salt-concentrated antitoxin (pseudoglobulin) and pepsin-treated antitoxin show, in this order, a progressive decrease in the proportion of the total unitage which is contributed by the γ antitoxin. It is possible that the relative and absolute amounts of the two antibodies in any given sample of serum may have a bearing on its therapeutic efficiency.

Medical Journal of Australia, Sydney

1:467-502 (April 19) 1941

*The 1937-1938 Epidemic of Acute Anterior Poliomyelitis in New South Wales, with Special Reference to Change in Age Incidence, Poliomyelitis During Pregnancy and Poliomyelitis Following Tonsillectomy. Karen Helms and W. J. Willecocks.—p. 467.

Value of Tellurite Mediums in Laboratory Diagnosis of Diphtheria. Helen Kelsey and A. D. Harvey.—p. 476.

Syphilis in Pregnant Women. Ella A. Macknight.—p. 478.

Technic and Application of Blood Transfusion and Plasma Transfusion. D. L. Barlow.—p. 480.

Recent Advances in Use of Acridine Antiseptics. A. Albert.—p. 482.

Poliomyelitis.—Helms and Willecocks discuss certain epidemiologic features of the 1937-1938 epidemic of acute anterior poliomyelitis in New South Wales. During the first nine months of 1937 the average monthly incidence was 2 cases. Between October 3 and October 30 5 cases occurred in the metropolitan area and 7 in rural districts. Up to Sept. 30, 1938 there were a total of 711 cases. The epidemic reached its peak earlier in the metropolitan area than in the rest of New South Wales. A study of the meteorologic elements from October 1937 to September 1938 suggest that the temperature and absolute humidity curves exhibit the closest correlation with the increase and decrease in the number of cases. The latter, commencing in spring, attains a maximum in a midsummer month and then declines. A somewhat similar correlation was suggested in the incidence of seasonal rainfall in northern parts of New South Wales. In the metropolitan area, during the early weeks of the epidemic and while the weekly incidence was increasing, severe paralysis developed in a greater proportion of patients than during the later stages of the epidemic. In rural districts the tendency may be masked by the fact that a relatively small population is spread over a large area. The number of deaths was greater in the rural districts at the beginning and at the height of the epidemic than in the later stages. In the metropolitan area there appears to be a tendency for the age group up to 4 years to be proportionately larger and the group more than 15 years of age to be proportionately smaller at the beginning of the epidemic than in its later stages. This tendency may be masked in rural districts for the same reason that the severity of paralysis was masked. The fatality rate in New South Wales was 2.5 per cent, or 17 deaths. For the rural districts it was 4.08 per cent, or 11 deaths. The oldest patient was 63 years and the youngest 7 months of age; 64 per cent of 601 patients were males and 34 per cent females. There were only 5 patients less than 12 months of age. The percentage of patients less than 10 years of age was greater in the metropolitan area (paralytic cases 76.8 per cent) than in rural districts (paralytic cases 53.5 per cent). In the 1937-1938 epidemic of poliomyelitis in New South Wales 5 patients contracted the disease during pregnancy, 1 in the fifth, 2 in the sixth, 1 in the eighth and 1 in the ninth month of gestation. In a study of these instances and 13 others reported in the literature there is only 1 in which spontaneous abortion followed closely on the infection. In 13 of the 15 patients whose pregnancy continued beyond the seventh month, the delivery and the child were normal. In the other 2 cesarean section was performed because of respiratory paralysis. Poliomyelitis in pregnancy uncomplicated by respiratory paralysis is not an indication for the interruption of the pregnancy. In the presence of respiratory paralysis during the last weeks of pregnancy, respiration may be facilitated by the removal of the fetus. Of the 711 patients 7 were known to have had a tonsillectomy and adenoidectomy from seven to twenty-two days prior to the onset of the illness. Bulbar and spinal paralysis developed in 3 of these 7 patients, 2 had paralysis of the palate, 1 had spinal paralysis with no evidence of bulbar involvement and 1 patient had the nonparalytic form of the disease. There were no deaths. A review of the literature supports the contention that operations on the throat and nose favor the development of poliomyelitis of the bulbar type. When this disease is prevalent, the risk of subsequent invasion by the virus should be well weighed before tonsillectomies or adenoidectomies are undertaken.

Cardiologia, Basel

4:313-380 (No. 6) 1940. Partial Index

Auricular Fibrillation Following the Injection of Acetyl- β -Methyl Choline Chloride (Mecholyl) During an Attack of Paroxysmal Auricular Tachycardia or Flutter. W. T. Cooke and P. D. White.—p. 313.

Changes of the Chest Leads of the Electrocardiogram Due to Damage of the Heart's Surface. B. Kisch.—p. 318.

*Influence of Gas Mask Breathing on Human Circulation. H. Hofer.—p. 331.

Complete Disappearance of Radical Pulse During Attack of Angina Pectoris (with Remarks on Coronary Theory of Angina Pectoris). F. Mainzer.—p. 361.

Gas Mask Breathing and Circulation.—The development of angina pectoris in a man aged 51 following a gas mask drill, induced Hofer to study the influence of gas mask breathing on the circulation. Investigations were made on 50 persons of both sexes, ranging in age from 16 to 55 years. Electrocardiograms were made during rest and after measured exertion, together with tests of the circulatory regulation according to the Schellong method, which in addition to a systematic control of the pulse and blood pressure measures and evaluates the QRS complex. All tests were made first without and then with the use of the gas mask. The putting on of the gas mask, even with the patient at rest, caused deeper and slower breathing; after the work test all persons manifested dyspnea and profuse perspiration. The pulse was usually somewhat accelerated by breathing through the mask when the person was at rest; during the work test, however, it was somewhat retarded. Systolic and diastolic pressures usually increased when breathing was through the mask by several millimeters, both at rest and during the work test. The electrocardiogram, while breathing was through a mask, revealed slight changes in all parts of the curve, but they were not pronounced or significant and differed only slightly from the usual electrocardiographic changes caused by work tests. It appeared that breathing through a gas mask does not cause a characteristic circulatory effect. At any rate there were no electrocardiographic changes which would indicate unequivocally an anoxemia or coronary insufficiency. The author concludes that gas mask breathing is well tolerated by healthy persons, but that impairment is possible in patients with circulatory disorders and in those threatened by such disorders.

Giornale Ital. di Dermatologia e Sifilologia, Milan

82:1-296 (Feb.) 1941. Partial Index

*Estrogen in Gonococcal Vulvovaginitis in Little Girls. A. V. Ferrari.—p. 142.

Estrogen in Gonococcal Vulvovaginitis in Girls.—According to Ferrari, vulvovaginitis in little girls is rare in families practicing hygiene and frequent in families which do not. He observed 147 patients ranging in age from 3 to 10. The condition was complicated by urethritis in 84 and by cervicitis in 60. The internal genitalia were not involved. For therapeutic purposes the author divided the patients in three groups. The first group consisted of 24 patients who presented no urethral or cervical infection. They were given estrogen as the sole treatment. The substance was administered intramuscularly in doses of 10,000 international units (dehydrofolliculin benzoate international units) at five day intervals until ten to twenty injections had been given. The second and third groups consisted of 48 and 75 patients respectively, with and without urethral and cervical complications. Patients in the second group were treated by irrigations of the external genitalia and vagina with a weak solution of potassium permanganate or of vaginal and urethral irrigations with a 2 per cent solution of strong protein silver or silver nitrate, after which a glycerin suppository containing 2 per cent of strong protein silver was inserted into the vagina. They were kept in bed for one hour. The treatment was administered twice daily until the infection was controlled and once daily for a month thereafter. Patients in the third group received estrogen in the same amount as those in the first group and local treatment as given to the second group. Vaccines, proteinotherapy and chemotherapy were not resorted to. Gonococci disappeared from the secretions within thirty days in 18 of the 24 patients who had estrogen alone and in 60 of 75 who were given estrogen and local treatment. Gonococci disappeared from the secretions within forty days in 34 of 48 patients who had local

treatment alone. Recurrence took place within six months in 10 of 18 patients of the estrogen group, in 29 of 60 in the combined group and in 15 of 34 of the local treatment group. Cure has been permanent up to the present, four years after discontinuation of the treatment, in 8 of 24 patients who had estrogen alone, in 31 of 75 who had the combined estrogen and local treatment, and in 19 of 48 who had the local treatment alone. Patients with recurrences and failures had two months of rest without any treatment, after which they were given vaccines, proteins or sulfanilamide. Of a large number of patients who had estrogen alone or combined with local treatment the general health improved, the patients gained weight and long standing eczema was controlled. Sixteen patients complained of painful swelling of breasts and 20 of moderate menstrual loss of blood. The symptoms disappeared in the majority of cases on discontinuation of the treatment. One girl, aged 10, presented signs of puberty and began to menstruate as the result of treatment. The author concludes that estrogen treatment is indicated only in exceptional cases of gonorrheal vulvovaginitis recently acquired and in cases without urethral and cervical involvement which are not controlled by the usual treatment.

Minerva Medica, Turin

1:93-116 (Jan. 26) 1941. Partial Index

*Sulfanilamide Resistance in Gonorrhea. E. Bizzozero.—p. 93.

Action of Ascorbic Acid on Glycemia of Patients with Liver Diseases. A. Turchetti and G. Schirosa.—p. 96.

Sulfanilamide Resistance in Gonorrhea.—According to Bizzozero, primary or secondary resistance of the gonococcus to sulfanilamide depends on the habituation of the bacteria to the drug when the latter is administered in small doses or at irregular intervals. Seventeen patients with early untreated gonorrhea were given progressively increasing doses of 0.5 to 3 Gm. for ten or fifteen days until a total of 16 or 18 Gm. was reached. This was followed by a four or five day period of rest, after which diminishing doses of 3 to 1 Gm. of the drug were administered up to a total of 12 to 20 Gm. in six to ten days. Resistance to the drug developed in 13 cases in ten to fifteen days. In another group, 30 patients were given 0.5 Gm. of sulfanilamide for three days. Local inflammation and pain abated in all of these. The urine of 16 patients became clear. It contained a few filaments with scanty pus cells. Gonococci disappeared from the filaments in 6 cases. The number of gonococci in the filaments did not change in 10 cases. The author concludes that the bactericidal properties of the drug are impaired if resistance is established. Administration of small early doses of the drug may result in the establishment of resistance. It is therefore advisable to give large doses of the drug from the beginning of the treatment. It would be preferable to interrupt treatment of the few patients who prove to be intolerant to the drug rather than to risk establishing resistance.

Policlinico, Rome

48:289-336 (Feb. 17) 1941. Prac. Sec. Partial Index

*Epinephrine in Acute and Chronic Diseases of Brain. F. Serraino.—p. 289.

*Rapid Desensitization with Calcium Before Reinjection of Antitetanus Serum. L. Faraglia.—p. 305.

Epinephrine in Diseases of Brain.—Serraino resorted to intravenous injections of epinephrine in 30 cases of essential or postencephalitic parkinsonism, in 4 of genuine epilepsy, in 3 of acute encephalitis and in 5 of rheumatic chorea. Patients with parkinsonism were given a daily dose of 0.1 or 0.2 mg. of epinephrine for ten days. The treatment was discontinued for from three to five days and then repeated. Children with rheumatic chorea and acute encephalitis were given small doses for from four to eight days and in a few cases a daily dose of 0.1 mg. for the last two days of treatment. The latter was well tolerated. Tremor and tics of patients with parkinsonism improved, whereas hypertonia, oculogyric crises, trophic and secretory disorders were not influenced. Epileptic seizures reappeared five months after discontinuation of the treatment. The convulsions became sporadic after administration of a second series of treatments. Chorea and symptoms of encephalitis

regressed to a complete cure after a number of injections which varied from four to ten. The author believes that epinephrine causes dilatation of the cerebral vessels with consequent improvement of the metabolism of the nervous tissues.

Desensitization with Calcium.—Faraglia injected calcium intravenously in an attempt to prevent anaphylactic reaction from a second or third injection of antitetanus serum. A solution of 0.5 Gm. of calcium gluconate and 0.05 Gm. of calcium lactate in 5 cc. of doubly distilled water was injected fifteen minutes before the intramuscular injection of antitetanus serum in 12 patients who had had antitetanus serum administered to them one or more years previously. Patients who manifested anaphylactic reactions on the first or second injection of the serum were given two intravenous injections of 5 cc. of the calcium solution. None of the 12 patients manifested signs or symptoms of anaphylactic shock. The author concludes that desensitization may be rapidly and safely obtained by intravenous administration of calcium.

Beiträge zur Klinik der Tuberkulose, Berlin

94:635-682 (May 23) 1940

Action of Enforced Confinement in Asylum on Asocial Patients with Open Tuberculosis. A. Aschenbrenner.—p. 635.

Casistics of Paroxysmal Tachycardia: Case Developing After Inducing Pneumothorax on Right Side. F. W. von der Ohe.—p. 642.

*Relationship Between Primary Tuberculous Infection and Progressive Pulmonary Tuberculosis: Investigations on Nursing Personnel. L. Ljung.—p. 647.

Clinical Significance of Complement Fixation Reaction in Tuberculosis. N. Kusunoki.—p. 656.

*Sepsis Tuberculosis Acutissima. C. Velten and Edith Fatum.—p. 672.

Primary and Progressive Pulmonary Tuberculosis.

Opinions regarding the relationship between primary tuberculous infection and progressive pulmonary tuberculosis are contradictory, and this contradiction is largely due to lack of uniform interpretations and nomenclature. Ljung continued investigations on nurses begun by Kristenson. The group consisted originally of 124 students of the school for nurses at the university hospital in Uppsala. During their three years of training Kristenson repeatedly subjected them to roentgenologic examination. All student nurses were examined at the beginning of their training clinically and roentgenologically. The Pirquet tuberculin test was made and read after forty-eight hours and repeated on nurses whose reaction was negative. Thirty-one student nurses who gave negative reactions to the second test were designated as negative; 23 of these became positive in less than a year, while after two years only 2 remained negative. These 2 were vaccinated with BCG and were disregarded in the subsequent investigation. The remaining 29 nurses with negative Pirquet reactions at the beginning of their training and the 93 who had been Pirquet positive from the beginning were reexamined about ten years later. This follow-up suggested that primary tuberculosis is generally not more dangerous in adults than it is in school children but that a progressive, destructive, postprimary pulmonary tuberculosis may develop already during the first year after the primary infection. There are as yet no data to prove with certainty that progressive pulmonary tuberculosis develops more frequently in those who had their primary infection after attaining adulthood than in those who had their primary infection in childhood. To clarify this question it would be necessary to make repeated tuberculin tests on the entire population. The majority of investigations on nursing personnel indicates that those who in the beginning have negative tuberculin reactions are in greater danger of contracting destructive tuberculosis than are those with positive tuberculin reactions. The destructive reinfection tuberculosis appears especially during the first two years after the manifest or latent primary tuberculosis. Experiences with the nursing personnel cannot be applied to the average population. Whether phthisis will develop in a tuberculous person seems to depend not so much on when the primary infection has taken place but rather on the frequency of incidence of tuberculous infection and especially on the congenital and acquired nonspecific resistance of the person.

Sepsis Tuberculosis Acutissima.—According to Velten and Fatum sepsis tuberculosis acutissima is infrequent. Landouzy was the first to call attention to this form as an independent

disease entity. He differentiated three types of acute tuberculosis, namely caseous pneumonia, miliary tuberculosis and typhobacillosis. The last named form pursues a sepsis-like course following acute tuberculous dissemination. The septic manifestations justify its being identified as an independent disease entity. It is characterized by intermittent fever which becomes continuous; by a variable pulse, either accelerated or retarded; by swelling of the liver and spleen, and by gastrointestinal disturbances. In contradistinction to miliary tuberculosis there is no cyanosis, dyspnea or roseola. Characteristic blood changes are absent, but in many cases tubercle bacilli are demonstrable in the blood. This form of acute tuberculosis has been discussed under such terms as "tuberculous sepsis," "sepsis tuberculosis gravissima," "sepsis tuberculosis acutissima" or "aractive generalized tuberculosis." The clinical diagnosis is difficult and possible only if tuberculous bacillæmia exists in the presence of Landouzy's syndrome. Some consider correct diagnosis possible only on the basis of microscopic studies done at necropsy. Microscopic studies reveal not inflammatory tissues, as in other forms of tuberculosis, but rather necroses with pyknotic nuclei and nuclear debris not sharply defined against the surrounding tissue. All observers found numerous tubercle bacilli in the necrotic foci. The surrounding tissue is usually free from tubercle bacilli or, at most, contains some bacilli in the vascular walls and the lymph channels. The appearance of extensive necroses without the slightest reaction in the surrounding tissue demonstrates definitely the lack of reactive capacity of the organism. The organism is in a state of negative anergy. Its defensive powers have been depleted and there is an unrestricted dissemination. The state of anergy manifests itself in the negative outcome of the tuberculin reaction. Sepsis tuberculosis acutissima frequently concurs with diseases of the hemopoietic system, such as leukemia, polycythemia, pernicious anemia, panmyelophthisis and acute agranulocytosis. Certain similarities in the clinical course led some investigators to believe that tuberculosis of the hilus lymph nodes is also a form of sepsis tuberculosis acutissima, and some authors admit that these lesions presuppose a similar biologic reaction and that they often present similar clinical aspects. Wyss stated that tuberculosis of the bronchial lymph nodes in children is identical with sepsis tuberculosis acutissima. The authors think that these forms differ in that the tuberculous process by its manifestation in the hilus lymph nodes has already followed a definite pathway, whereas sepsis tuberculosis acutissima represents that undifferentiated state of reaction in which all variations are still possible. They conclude that sepsis tuberculosis acutissima is characterized by the absence of a specific allergy. It is probable that constitutional factors and infection at an advanced age in the presence of temporary deficient resistance play a part in the pathogenesis.

Chirurg, Berlin

12:725-766 (Dec. 15) 1940. Partial Index

Sterility During Injections with Special Consideration of Prophylaxis of Gas Gangrene. A. Hübner.—p. 725.

*Arteriotomy in Endangiitis Obliterans. H. Schaer.—p. 730.

Excision of Wounds. W. Noetzel.—p. 739.

Arteriotomy in Endangiitis Obliterans.—Periarterial sympathectomy for the treatment of endangiitis obliterans, introduced by Leriche in 1914, survived, according to Schaer, for a long time in spite of failures and of the anatomic demonstration that not all sympathetic nerve fibers are destroyed in this procedure. It is now generally conceded that the success of a periarterial sympathectomy is only temporary. Leriche himself discarded the method in favor of arteriotomy. Lumbar and cervical sympathectomies were practiced with technical modifications by a number of investigators after 1925. In recent years the opinion has gained ground that ganglionectomy is preferable to division of the rami communicantes. Arteriotomy, introduced by Leriche in 1916, has found more adherents in recent years. Leriche maintains that a thrombosed artery is the starting point of many vasoconstrictive reflexes which prevent formation of a collateral circulation and that for this reason every localized arterial thrombosis should be removed by a resection extending in each direction beyond the obliteration. This procedure resulted

in 38 per cent of cures of cases of Buerger's disease and in 43 per cent of cases of arteriosclerotic obliteration. The author employed this method in 4 cases. The treatment resulted in a failure in 1 case, while in another case the improvement was only temporary. In the other 2 cases the treatment proved highly successful and the results permanent. The author stresses that after all conservative measures have been exhausted an arteriogram should be made to determine the local extension of the process. The thrombosed artery should be removed as completely as possible. If the thrombosis is too extensive to permit surgical removal of all the diseased vessel, ganglionectomy or resection of the sympathetic trunk is advisable.

Der Deutsche Militärarzt, Berlin

5:513-584 (Dec.) 1940. Partial Index

Treatment of Infected Craniocerebral Gunshot Wounds in War Hospital. W. Schulze and W. Betzendahl.—p. 514.

Special Hospitals for Gunshot Fractures: Experiences During Spanish War. F. Jimeno-Vidal.—p. 529.

Splint for Extension Treatment of Arm and Leg. E. Heller.—p. 537.

Gymnastics in Military Hospitals. J. Menges.—p. 540.

Transferring Wounded on Stretchers. H. Kritzler-Kosch.—p. 547.

Production and Estimation of Canned Foods from Standpoint of Military Hygiene. L. Stutz.—p. 549.

*Does Inhalation of Horse Dust Containing Cutaneous Scales Produce Allergy Against Horse Serum? W. Sprügel.—p. 559.

Inhalation of Cutaneous Scales from Horses and Allergy to Horse Serum.—Reports to the effect that inhalation of cutaneous scales of horses can produce hypersensitivity to horse serum induced Sprügel to investigate the subject in soldiers who come in contact with horses. He made tests on two groups of 50 soldiers each. One group was in constant contact with horses, whereas the other was composed of men who had never been in contact with horses. Previous serum injections or consumption of horse meat was ruled out. Intracutaneous wheals were produced with 0.05 cc. of horse serum diluted 1:10 with physiologic solution of sodium chloride. Of the 50 men who handled horses, 19 showed after from ten to thirty minutes local redness and mild swelling up to the size of a quarter (24 mm.) about the site of injection. Only two men showed more severe reactions, somewhat like urticarial wheals, the areas varying in size from a silver dollar (38 mm.) to the palm of a small hand. The other 29 men who handled horses had negative reactions. Of the group of men who had never been in contact with horses, 21 reacted with local redness and mild swelling, one man reacted by developing a wheal. The other 28 had a negative reaction. The high percentage of "positive" reactors is without significance because, as H. Schmidt has pointed out, a specific reaction is characterized by the development of a wide urticarial ring with occasional pseudopodia-like projections into the surrounding area of erythema. Simple redness and mild swelling are pseudoreactions of a nonspecific nature. The almost identical percentages in the two groups indicate the unlikelihood of inhalation of horse scales producing an allergy against horse serum. The antigen of the cutaneous scales which elicits attacks in asthma patients sensitive to horses is presumably not the same antigen as the protein of horse serum.

Folia Pharmacologica Japonica, Kyoto

31:1-184 (Feb.) 1941. Partial Index

*Experimental Studies on Treatment of Malaria: I. Combination Treatment of Malaria in Canaries with Quinine and Sulfonamide. M. Terasak, T. Sugimoto and N. Kinosita.—p. 180.

Sulfonamide Derivatives and Quinine in Malaria.—Terasak and his associates endeavored to ascertain the synergistic action of sulfonamide derivatives in combination with quinine in the treatment of malaria in canaries. It is known that the sulfonamide series of drugs alone are ineffective in curing this parasitic disease, but this investigation shows that when used as a supplement to quinine they exert an appreciable therapeutic effect. The first part of the report deals with the authors' attempt to determine the toxic and lethal doses of various sulfonamide drugs on canaries. The five different compounds tested in this respect show a marked difference, azosulfamide being the least toxic (the lethal dose 75 mg. to 10 Gm. of body weight) and both sulfanilamide and sulfapyridine the

most toxic (the lethal dose 15 mg. to 10 Gm. of body weight). When compared with the lethal dose for mice, the relative toxicity of these preparations was approximately identical. For the second stage of their investigation the authors transmitted the disease to canaries by intramuscular injection of 0.2 cc. of about 10 per cent suspension of infected blood in physiologic solution of sodium chloride. The sulfonamide derivatives were injected on the ventral aspect of the bird, while quinine was administered on the dorsal aspect, the injections having been continued once daily for five days in each bird. From a small series of experiments the authors were able to prove that when given alone the sulfonamide derivatives exerted no therapeutic effect, the bird dying in about two weeks as in the case of untreated controls. The administration of quinine hydrochloride alone, on the other hand, led to the cure of the disease in the bird but required four weeks of therapy; but quinine in combination with sulfonamide derivatives so effectively hastened recovery that in some instances the number of parasites in the peripheral blood was never high, while in the remaining cases the course of the disease was shortened by at least one week. Further investigations along this line are in progress.

Okayama-Igakkai-Zasshi, Okayama

53:187-400 (Feb.) 1941. Partial Index

*Experimental Studies on Skin Absorption of Testicular Hormone. N. Sato.—p. 187.

Cutaneous Absorption of Androgen.—The substance used by Sato in his experimental observations was prepared from the whole male organs of mammals by a pharmaceutical concern and, although it was not a pure chemical substance, contained a potent androgenic principle. The test animals (*Mus norvegicus* var. *albus*) were anesthetized with ether and the testes were completely removed, care being taken to avoid undue traumatization of the epididymis. The experimental procedures were begun on the fourth day after the operation, one group of animals receiving daily subcutaneous injections of 0.2 cc. of the substance, the second treated with inunctions of 0.2 cc. over a shaved skin area approximately 6 sq. cm. twice or thrice daily, and the third group left untreated as controls. After twenty-five days of treatment the animals were killed and the tissues around the sex organs carefully removed and immediately fixed in solution of formaldehyde U. S. P. diluted 1:10, in which they were dehydrated for twenty-four hours. Each component part of the sex organ (penis, prostate, seminal vesicle, epididymis, seminiferous tubule) from each animal was then dissected out and weighed on a torsion balance. The results of determination showed that, on the basis of the weight of each organ of the control group as 1, the organs of the androgen treated animals increased in weight from 1.3 to 1.7. The animals receiving the substance by injection exhibited a slightly greater gain in weight of the sex organs than those of animals treated by inunction. The preparation used in these experiments being lipid soluble, the author tinted the substance with sudan III, and the microscopic sections of the androgen-anointed skin revealed the concentration of the dye at the root of the hair follicles and the accumulation in the sebaceous glands of the skin. From these observations the author concluded that either by the injection or by the inunction of androgen on the skin of castrated animals the atrophy of the sex organs could be prevented and that the substance was absorbed through the sebaceous glands of the skin.

Vrachebnoe Delo, Kharkov

22:641-720 (No. 10) 1940. Partial Index

*Closed Plaster Method of Treatment of Gunshot Fractures. S. A. Novotelnov.—p. 641.

Effect of Lumbar Punctures on Experimental Traumatic Edema of Brain. A. L. Fisanovich.—p. 649.

Effect of Neuropsychic Factors on Functional Characteristics of Transfused Blood. A. P. Dementiev and G. Yu. Malis.—p. 653.

Stomach in Strangulated Femoral Hernia: New Method of Emergency Repair of Hernial Opening. D. G. Aleksandrovskiy and I. G. Degtyarev.—p. 655.

Complaints of Cardiac Patients. M. V. Burgsdorf.—p. 657.

Closed Plaster Method of Treatment of Gunshot Fractures.—Extensive experience with the closed plaster of paris method of treatment of gunshot fractures in the orthopedic clinic of Professor Turner in Leningrad has demonstrated, according

to Novotel'nov, its superiority over the older methods. Certain physiologic principles, however, must be adhered to, namely application of the cast with the limb in physiologic position; that is, with the two adjacent joints slightly flexed. The function of the cast is to immobilize the fragments and the extremity, including the two adjacent joints. Wounds were treated by careful débridement, covered with dry gauze (never cotton) and encased in circular plaster of paris bandages. Primary suturing of wounds was not practiced. Badly infected wounds were covered, after wide excision, with gauze saturated in physiologic solution of sodium chloride or hypertonic saline solution and circular plaster of paris bandages were applied. The wounds were not redressed for periods of from ten to forty days. When a rise in temperature, leukocytosis, the sedimentation test and the patient's general condition necessitated a change of dressing, a window was cut in the cast, dressings were changed and the window closed by fresh plaster of paris circular bandages. Saturation of the cast with discharges from the wound and the offensive odor do not constitute per se an indication for removal of the cast. The closed plaster method has been adopted as standard procedure in Professor Turner's clinic for gunshot fractures of the shoulder, arm, elbow, wrist, knee, leg and foot. In fractures of the femur, the method is used only when there is no shortness of the leg or when the difference in length of the two legs does not exceed 2 cm. Limbs with more extensive shortening are treated by traction in a Böhler's splint. As soon as consolidation is evident (on an average of thirty days) the traction is discontinued and the circular plaster cast is applied. Septic wounds and wounds infected with anaerobes were treated by hypertonic salt solution. The author relies in combating infection principally on physical rather than on chemical antiseptics. This consists of efficient drainage of the wound, of keeping the wound at rest by fewer dressings and of placing the entire limb at rest. A comparison of the results obtained with the closed method and with the method in which a window was cut out to allow frequent dressings demonstrated that better results were accomplished both for the fresh and for the already infected wounds with the closed method. The favorable effect of the closed plaster method is probably due in part to conservation of moisture and heat, elements essential in regeneration of tissue. Mortality with this method for a period of four months amounted to 0.4 per cent. There was not a single amputation. Septic patients were given sulfanilamide in a solution of dextrose intravenously and vitamin C. For severe neuralgic pain and for the phantom pain after amputation, vitamin B₁ in physiologic solution of sodium chloride was given in daily doses of 5 mg. intravenously, intramuscularly or subcutaneously. In the last two months, the author's clinic has adopted the use of prepared specific polyvalent pyogenic bacteriophage. The bacterial flora of the wound contained not infrequently *Bacillus perfringens* and other anaerobes, but there was no instance of anaerobic infection. Apparently anaerobes develop only in tissues previously damaged by the action of pyogenic micro-organisms, in particular by the *Streptococcus*. While the number of patients treated with bacteriophage is too small to form a definite conclusion, the author is under the impression that the combination of the two methods, closed plaster method and the application of bacteriophage, improves the results of the closed plaster method alone.

Nordisk Medicin, Stockholm

Hospitaltidende

9:323-402 (Feb. 1) 1941. Partial Index

*Diagnosis of Cancer of Lungs with Special Regard to Possibilities of Early Diagnosis. N. Christiansen.—p. 327.
*Xanthomatosis in Vascular System. J. Hoffmeyer.—p. 365.

Early Diagnosis of Cancer of Lungs.—Christiansen says that in order to arrive at the earliest possible diagnosis of pulmonary cancer there must be collaboration between the general practitioner, to find cases with a suggestive history, the diagnostic clinic, to single out the objectively suspected cases, and the thoracic surgeon, to decide whether a tumor of the lung

is present and whether it is operable. He stresses the essential cooperation of the practitioner, who must constantly have in mind the diagnosis of a pulmonary tumor; his task is difficult, since primary malignant pulmonary tumors are still infrequent in the general practice and the initial symptoms are often atypical. The symptoms of cancer of the lung are irritation, occlusion, ulceration, infection, invasion, compression, toxemia and metastases. The peripheral, so-called parenchymatous, tumors may develop for a long time without pulmonary symptoms and may first be manifested by their toxic effects, eventually in combination with symptoms of compression. Only cases presenting symptoms in the first four categories may be considered operable, and none of these symptoms can be said to be pathognomonic for cancer. The author suggests that all patients over 35 years of age with pulmonary symptoms of uncertain etiology, especially when tuberculosis cannot be established, who do not improve after medical treatment of from four to five weeks should be suspected and examined more closely; patients with hemoptysis, pain in the thorax and dyspnea, when another cause cannot quickly be established, should be examined without delay and those with a general toxic condition should also be suspected, even though pulmonary symptoms are absent. Of his 28 cases of histologically verified malignant tumor of the lung only 6 were in an early stage and only 2 of these had been recognized on the first examination. He concludes that while the chances of detecting a lung cancer while it is still operable are slight, the interest of the physician in early diagnosis has been awakened and one may, thanks to modern surgery, look to the future with some optimism.

Xanthomatosis in Vascular System.—Hoffmeyer describes in detail a case of essential general xanthomatosis in a woman aged 46 with a history of xanthomatous nodules localized symmetrically in the tendons and fasciae of both upper and lower extremities for many years, rapid development of a typical clinical angina pectoris during a year and a half and death with symptoms of coronary thrombosis. There were pronounced xanthomatous changes in the endocardium, aorta, coronary arteries, carotid and basal arteries of the brain, together with significant lipid deposits in the small arteries and the arterioli and pathologic fat deposits in the liver, kidneys, adrenals and thyroid gland. The author asserts that the pathologic anatomy of vascular xanthomatosis greatly resembles that of arteriosclerosis, the differences observed being quantitative, and suggests that arteriosclerosis may develop on the basis of a far weaker and less acute disturbance of the cholesterol metabolism than that in vascular xanthomatosis. While the etiology of essential xanthomatosis is uncertain, a hereditary factor, he says, undoubtedly plays a part.

9:481-550 (Feb. 15) 1941

*Eye Symptoms in Malignant Tumors of Rhinopharynx. E. Godtfredsen.—p. 493.

Eye Symptoms in Malignant Tumors of Rhinopharynx.—Godtfredsen stresses the vague and uncharacteristic early symptoms in malignant tumors of the rhinopharynx. In not a few cases the general condition is surprisingly good. Metastases to the lymph nodes occur early, with typical localization below the mastoid process and behind the mandibular angle. The close relation of the tumor to the base of the brain and its tendency to invade cause lesions of the cranial nerves, especially the nerves of the eye. Of the 64 malignant tumors of the rhinopharynx in patients aged from 16 to 76 treated at the Copenhagen Radium Station from 1931 to 1940, 20, or 30 per cent, showed eye symptoms, most often paralysis of the abducens (17 cases), least often lesion of the optic nerve (4 cases). In all, fifty lesions of the nerves of the eye were established in the 20 patients. The author says that, while the prognosis in these tumors is grave, roentgen therapy according to Coutard's principle can, if instituted in time, lead to recovery. Of the 20 patients, 7 were alive and without symptoms after an observation period of from six months to seven and one-fourth years.

Book Notices

Chemical Warfare. By Curt Wachtel, Founder Pharmacological Section of the Kaiser Wilhelm Institute. Cloth. Price, \$4. Pp. 312. Brooklyn: Chemical Publishing Co., Inc., 1941.

This is essentially a primer of chemical warfare, intended to be "comprehensible not only to chemists, physicians, engineers and military experts, but also to the laymen who are the prospective individual victims of the war gases." Consequently it is not to be compared with the standard works on the subject as a source of technical information. It was obviously hastily put together and was edited poorly or not at all. In spite of its numerous defects it makes interesting reading, largely because it is written in narrative style, because it records the personal experiences of the author, who played an active part in chemical warfare in the first World War, and because it summarizes a large amount of information concerning individual chemical agents. The name of Fritz Haber, originator and director of the Chemical Section of the German War Department and also originator of the process used for fixing atmospheric nitrogen, is prominent in the book. The volume may be read with profit by those who wish a general, rather than a technical, treatment of the subject of chemical warfare, including its economic as well as its chemical and military aspects.

Surgery of Modern Warfare. By Sixty-Five Contributors. Edited by Hamilton Bailey, F.R.C.S., Surgeon, Royal Northern Hospital, London. In Two Volumes. Volume I. Cloth. Price, \$10. Pp. 480, with 502 illustrations. Baltimore: William Wood & Company, 1941.

The editor of this work is well known to surgeons of the Western Hemisphere through his writings and his textbook on *Physical Signs in Clinical Surgery*. In this volume are demonstrated anew the qualities that made his textbook so popular, the free, almost extravagant use of illustrations to amplify and adorn the clear and concisely written matter of the book. After reading the names of the contributors one must agree with the editor's statement that "This is a work written by a team which can claim to represent British surgery." The contributions come from surgeons in all arms of the services and from all parts of Great Britain.

This volume is divided into eight sections, each one comprising a varying number of chapters. Sections 1 and 2 cover wounds in their general and special considerations. The next three sections deal with wounds of the trunk, blood vessels, peripheral nerves and tendons. Section 6 gives methods of immobilizing the limbs, section 7 covers wounds of the hand and foot, while section 8 begins the consideration of wounds of the bones and joints. With such a large number of contributors, one might expect an appreciable variation in interest and presentation in the many chapters, each by a different author; but while there is inevitably a slight overlap of subject matter, it does not make for annoyance and it is free from irritating redundancy. At the end of most chapters are given pertinent references to source material.

It is inevitable that much of the subject matter is based on, or at least compared with, surgical experience in the last war, the lessons of which we have had a chance to analyze. It is, perhaps, regrettable that with fortunately limited opportunities the writers have not been able to give a final answer to questions arising from the changing philosophy of the care of wounds and chemotherapy. The book is written by men actually engaged in caring for those injured by all destructive methods of totalitarian warfare and they can give only what opportunity has offered them to learn. The final conclusions will be written later.

Methods, apparatus, technics and surgical philosophy are given in the most vivid and practical style, aided by more than five hundred illustrations. These range from helpful line drawings to beautiful colored reproductions of wounds. The latest views on shock, burns, chemotherapy, oxygen therapy, transfusion and preparation of plasma, and the use of heparin, are included and well presented. It is impossible to choose for special praise or censure any of the sections, since all are up to date and authoritative.

The second volume will cover problems associated with neurosurgery, with sections on administration, transport and organization of hospitals and its services.

The book is easy to handle, the pages and print make it easy to read. It is a volume for the library and not for the field. One must respect the opinions of the writers because of past achievements, and they have written now amid changing methods and in the face of new and dreadful problems. The book can be read with interest and profit by surgeons familiar with and skilled in the care of traumatic lesions, although much of the subject matter will be elementary to them. It will prove a veritable necessity to the surgeons whose efforts have been confined to the usual civilian practice but whose activities may be transferred to the care of trauma in the mass. War minimizes specialization; therefore, this book is heartily recommended to any one interested in the care of the injured, whether student, intern, military or civil surgeon, surgical specialist or general surgeon. It gives the views of today; the truth will crystallize tomorrow.

The Therapy of the Neuroses and Psychoses: A Socio-Pscho-Biologic Analysis and Resynthesis. By Samuel Henry Kralnes, M.D., Associate in Psychiatry, University of Illinois College of Medicine, Chicago. Cloth. Price, \$5.50. Pp. 512. Philadelphia: Lea & Febiger, 1941.

Another textbook of psychiatry appears on the American book list and another disappointment. This is one more psychobiology with all the wordiness that usually goes into such a product. The usual orthodox categories are described in the usual terms of stress and faulty habits, of constitution and specific attitudes or reaction patterns. The author's language becomes so involved that one can only accuse him of thoroughness to confusion rather than error. When it comes to therapy, which is the real object of discussion, the reader is amazed at the naïveté expressed: "As the discussion reveals specific attitudes or reaction patterns which are in themselves unhealthy and which have contributed to the emotional instability of the patient, the physician enlists the cooperation of the patient in ascertaining the origin of the particular attitude. When the cause, or more usually the causes, are determined, the patient's reactions to the causes is discussed and the better attitudes which should have been used are suggested in order to remove any resentment still existing in the unconscious" (p. 127). The author has not one single reference to another book or journal except, after stating that psychoanalysis may appear as fantastic nonsense (p. 424), he gives a lengthy abstract from a textbook of psychoanalysis in such garbled fashion as to convince the unknowing reader that it is nonsense, as Kralnes believes. If it has as yet not become clear, the reviewer emphatically believes the book can only confuse and disorient the reader who has curiosity regarding the field of psychiatry.

The Heart in Pregnancy and the Childbearing Age. By Burton E. Hamilton, M.D., Cardiologist, since 1921, to The Boston Lying-in Hospital, Boston, and K. Jefferson Thomson, M.D., Associate Physician, Metropolitan Life Insurance Company Sanatorium, Mount McGregor, New York. With a section entitled *Delivery and Obstetrical After-Care of Cardiacs*. By Frederick C. Irving, M.D., F.A.C.S., Professor of Obstetrics, Harvard Medical School, Boston. Cloth. Price, \$5. Pp. 402, with illustrations. Boston: Little, Brown & Company, 1941.

This is a comprehensive book on every aspect of heart disease that may occur in women during pregnancy and the childbearing age. The book is divided into three parts, the first of which deals with the cardiac in pregnancy, the second takes up physiology of the circulation in normal pregnancy and in pregnant women with heart disease and the third comprises the heart diseases in pregnancy and the childbearing age. Hamilton, who practices as a general cardiologist, has been in charge of the heart clinic at the Boston Lying-in Hospital for the last twenty years and Thomson spent three years as full time research worker at the same hospital, devoting a great deal of time to physiologic studies of the heart and circulation. The authors are therefore distinctly well qualified to write a book on heart disease in pregnancy. The book is based chiefly on the authors' extensive experience comprising 850 cardiac patients among 48,190 pregnant women (1.7 per cent) but they frequently refer to the studies of other investigators. The section dealing with the delivery and obstetric after-care of cardiac patients was written by Frederick C. Irving, professor of obstetrics at the Harvard Medical School. The book is easy to read and

contains numerous case histories which are highly instructive. The type is clear and there is a well prepared index. This book contains so much valuable data not only of the physiology and pathology of the heart but also of the proper diagnosis and management of heart disease in pregnant and puerperal women that every cardiologist, internist and obstetrician should be familiar with its contents.

The Doctor and the Difficult Child. By William Moodie, M.D., F.R.C.P., D.P.M., Medical Director, London Child Guidance Clinic and Training Centre. Cloth. Price, \$1.50. Pp. 214. New York: Commonwealth Fund; London: Oxford University Press, 1940.

This is a book to be welcomed by pediatricians, general practitioners and intelligent laymen, for it lives up to the opening statement of the author's introduction: "This is not a scientific treatise; it is rather an informal discussion of fundamental disturbances of behavior or personality in children and how they can be recognized, investigated and treated." The well organized text is uncumbered by medical terms and theories of treatment. Throughout, the author stresses the necessity of determining the underlying cause of the disturbance and the importance of work, security and affection in maintaining a healthy child. Numerous case histories amplify each point. The pediatrician and general practitioner will find the suggestions for diagnosis through interpretation of the child's play, drawing and conversation valuable in their own work. Laymen will not only learn what to expect of normal children but will gain an excellent foundation for understanding their children and for further reading.

O prodolzhitelnosti zhizni heterogennykh i gomogennykh eritrotsitov v krovyanom rusle rettsiplenta; eksperimentalnoe issledovanie. [By] N. S. Voronov. [Duration of Vitality of Heterogenous and Homogenous Erythrocytes in Blood Stream of Recipient; Experimental Study.] Paper. Price, 4 rubles. Pp. 96, with 7 illustrations. Rostov on Don: Rostovskoe Oblastnoe Vedomstvennoe Izdatelstvo, 1940.

The monograph deals with an experimental attempt to determine the survival of the transfused red blood cells in the circulation of the recipient. Experiments were made with both heterogenous and homogenous bloods. The method of investigation developed by the author is based on the well known phenomenon of Bordet that serum of an animal of a certain species when immunized with erythrocytes of an animal of another species acquires the property of dissolving erythrocytes of the latter only. The method allows of both the qualitative and the quantitative determination of the erythrocytes in the blood circulation of the recipient. Transfused heteroerythrocytes are eliminated rapidly, although wide differences were found for different species. Homoerythrocytes of the citrated blood, on the other hand, survive up to two months. The erythrocytes of conserved blood are eliminated from the circulatory blood of the recipient as early as the fifth day. This is a worth while contribution to the general subject of blood transfusions. It is in Russian and does not contain the usual summary in any of the more readily accessible languages.

Lectures on Diseases of Children. By Sir Robert Hutchison, Bart, M.D., F.R.C.P., Consulting Physician to the London Hospital, London, and Alan Moncrieff, M.D., F.R.C.P., Physician to the Children's Department, Middlesex Hospital, London. Eighth edition. Cloth. Price, \$6.75. Pp. 471, with 107 illustrations. Baltimore: William Wood & Company, 1940.

This edition has been revised and brought up to date by Dr. Alan Moncrieff. The chapters on infant feeding and artificial feeding are entirely new. The chapter on digestive disorders of infancy has been revised, and there has been extensive change in the chapter on behavior problems in childhood. As originally constituted, this book consisted of lectures delivered as a systematic course in pediatrics. As such it expressed one man's views and was necessarily to some extent dogmatic in character. It is the opinion of the reviewer that, in the revision of the book by the co-author, other views and a limited citation of the literature might have benefited the student for whom the book is intended. This is a pedagogic question which must be answered by the individual teacher according to the previous preparation and advancement of the student body. The book is excellently illustrated and well printed, has a complete index, and will serve its purpose as an aid to the student and teacher of pediatrics.

Magic in a Bottle. By Milton Silverman, Ph.D. Cloth. Price, \$2.50. Pp. 332. New York: Macmillan Company, 1941.

This book does for the chemical trail breakers what De Kruif's "Microbe Hunters" did for the bacteriologic pioneers. The author, by virtue of his experience in scientific circles on the Pacific Coast especially in connection with the Golden Gate International Exposition, is well qualified to write it and has done so ably. The book deals with the discovery and introduction of morphine and quinine, digitalis, cocaine, the antisyphilis drugs, acetylsalicylic acid, barbituric acid and its derivatives, the vitamins, the hormones and the sulfanilamide group. The book is written in the best tradition of popular science writing. All the heroes are struggling young men with big ideas which are scornfully rejected by scientific stuffed shirts. Right always triumphs, which makes for the progress of science and also makes excellent reading. Much of the commendably accurate but regrettably dull scientific writing for the public could be greatly improved with a little touch of human nature and drama so interestingly supplied in this book. Those who read it will know much more about the medicines their doctor uses and in the process of learning they will be agreeably diverted and pleasantly stimulated.

Tumores primitivos malignos broncopulmonares: Cáncer, sarcoma, linfogranuloma. Por Julio Palacio, profesor adj. de clínica médica de la Fac. de med. de Buenos Aires, y Egidio S. Mazzel, Prof. adj. de clínica médica de la Fac. de med. de La Plata. Paper. Pp. 401, with 129 illustrations. Buenos Aires: El Ateneo, 1940.

The great increase in the occurrence of cancer of the lung in the last few years has offered a large material for clinical and pathologic study. This volume emphasizes especially the clinical side and in addition to carcinoma includes sarcoma and a short section on Hodgkin's disease of the lung. It furnishes an excellent survey of the subject from this special aspect. There are some well reproduced colored plates showing the gross aspects of interesting types of lung tumors, and photomicrographs of the various forms of carcinoma of the lung. What is most interesting is a large series of roentgenograms of the lung lesions, which are well reproduced. There is a complete bibliography, which is on the whole accurate as far as has been verified, though the proofreading of names and some foreign words could be improved. For those who are familiar with Spanish this is a useful treatise.

Die Appetitlosigkeit im Kindesalter. Von Julius Surányi, Oberarzt am Stefanie-Kinderspital, Budapest. Paper. Price, 6 Swiss francs. Pp. 128. New York: Nordmann Publishing Company, Inc.; Basel: S. Karger, 1940.

This small monograph on anorexia in childhood is a reprint from *Annales Paediatrici* (155:177 [July-Aug.], 345 [Sept.] 1940). The etiology of anorexia is considered from an organic, a nutritional and a psychic basis, and the prophylaxis of anorexia is discussed. Specific therapy for anorexia includes dietary instructions, vitamin therapy and treatment of diminished digestive secretion. In a disease condition the causes of which are so diverse, one realizes that no single specific therapeutic agent is universally applicable. Among the remedies recommended to stimulate appetite are iron, copper and liver for anemia; arsenic, strychnine and other tonics are also recommended, and the use of insulin is included. Finally, two pages are devoted to psychic therapy. The author has presented a review of the literature, although he has not presented any new or startling discoveries as to the nature and treatment of the condition.

You . . . Might Like Pharmacy as a Career: An Occupational Brief Prepared by Western Personnel Service Under the Sponsorship of the University of California as a Report of Works Projects Administration, Official Project No. 65-1-07-2258. Paper. Price, 25 cents. Pp. 14. Pasadena, California: Western Personnel Service, 1940.

On the inner title page appears the additional information that this "brief" is a report of the Works Projects Administration, Official Project No. 65-1-07-2258. The brochure sets forth in glowing language the opportunities and advantages of pharmacy as a vocation. The somber side of the picture is discreetly veiled.

Sella turcica und Konstitution: Versuch einer Sella-größen- und Formdeutung innerhalb konstitutionsmedizinischer Gefüge. Von Dr. med. Hans-Otto Martin. Eine Gemeinschaftsarbeit aus der Charité Berlin. Boards. Price, 5.70 marks. Pp. 107, with 9 illustrations. Leipzig: Georg Thieme, 1941.

This small monograph has for its purpose the correlation of the shape and size of the sella turcica, as seen in roentgenograms taken under standard conditions, with various constitutional states. It is based on the statement (p. 10) that in view of the facts that no one gland of internal secretion can be regarded separate from the entire endocrine system and that the hypophysis occupies a central position in this system we are justified in examining the sella turcica not only in hypophysial disorders but in other endocrine and neuropsychiatric syndromes as well. The author attempts to draw correlations between sellar structure and disturbances of the development of the capillary bed in myxedema. Efforts at finding some significance in so-called bridging of the sella turcica (pp. 26-28) were not very successful. It was not possible to correlate any particular constitutional type with any particular form or size of the sella, but as generalizations the author was able to say that in tall and acromegalic persons the sella is usually large and round, in the asthenic and thin it is usually small, whereas in those with retarded growth the sella turcica may be either large or small. The results of this investigation presented here cannot be regarded as of far reaching significance.

Principles of Abnormal Psychology: The Dynamics of Psychic Illness. By A. H. Maslow, Ph.D., and Béla Mittelmann, M.D. Cloth. Price, \$3.50. Pp. 638. New York & London: Harper & Brothers, 1941.

This is a good year for students of psychology, for here is at last a dynamic, vibrant textbook of psychology that cannot be ignored by academic teachers. In this volume human conduct, motivation and dynamics are discussed in relation to actual patients in real situations. The book is written for college students, but its brilliant, accurate yet lucid expositions indicate its usefulness to medical students and general practitioners. No one point of view or school is followed, for the interests and background of the authors are broad and thorough. There is an excellent index and glossary; extensive references and suggested readings are profuse and interpolated throughout the text. The headings and subdivisions of the book make reference work extremely easy. This is a book that can be unequivocally recommended for those interested in abnormal psychology.

On Nicotinic Acid: Especially Methods for Its Quantitative Estimation in Organic Material. By Erik Bandier. Translated by Dr. P. G. Lund. Denne Afhandling er et af det lægevidenskabelige Fakultet antaget til offentlig at forsvares for den medicinske Doktorgrad. København, 1940. Paper. Price, 10 Danish kroner. Pp. 165, with 8 illustrations. Copenhagen: Ejnar Munksgaard, 1940.

This book consists largely of a summary of the experimental work conducted by the author during the past three years. The first chapter gives a historical account of nicotinic acid and a description of its clinical and pharmacologic properties as well as its use in therapy. A rather complete summary of the other pyridine derivatives found in the human and animal organisms follow in the second chapter, but most of the remainder of the book gives the detailed results obtained from nicotinic acid determinations on biologic material by the cyanogen bromide method. The values given for the nicotinic acid content of various tissues check fairly well with the few figures available in the literature. The author points out that nicotinic acid is excreted partly as free nicotinic acid and partly in combined forms. After ingestion of 90 mg. of nicotinic acid by fasting healthy persons only 15 per cent was recovered in the urine. Similar results have been reported by other workers. The entire book gives emphasis to the limited amount of knowledge concerning the metabolism of nicotinic acid in the human body and to the great need for much more work.

Feeding Our Old Fashioned Children: A Background for Modern Mcallimes. By C. Anderson Aldrich, M.D., Associate Professor of Pediatrics, Northwestern University Medical School, Chicago, and Mary M. Aldrich. Cloth. Price, \$1.75. Pp. 112, with 6 illustrations. New York: Macmillan Company, 1941.

Probably the most common problem presenting itself in pediatric practice is that of the child who will not eat. This book has been prepared in an effort to aid parents in the solution of that situation. The first ten chapters of the book

are devoted to presentation of the problem and discussion of the etiologic factors contributing to the refusal of food. The last chapter is concerned with the treatment of the child afflicted with anorexia. Unfortunately, parents do not become aware of the problem until it is well established; hence it would seem that more material should be devoted to the unraveling of the situation rather than to the discussion of the elements responsible for its inauguration. The theories and ideas presented appear sound. On the other hand, it would appear that the field of usefulness of this book is somewhat limited.

Dyke's Automobile and Gasoline Engine Encyclopedia: The Elementary Principles, Construction, Operation and Repair of Automobiles, Gasoline Engines and Automobile Electric Systems; Including Trucks, Tractors, Motorcoaches, Automotive Diesel Engines, Aircraft Engines and Motorcycles. Simple, Thorough and Practical. By A. L. Dyke. Nineteenth edition. Cloth. Price, \$6. Pp. 1,244, with illustrations. Chicago: Goodheart-Willeco Company, Inc., Publishers, 1941.

As the title indicates, this book of nearly fifteen hundred pages is encyclopedic in its information about automobiles and gasoline engines. In compiling the data the author had in mind the car owner, the repair man and the student. He discusses the underlying scientific principles involved in each subject and makes the book practical in various ways, including thousands of pictures, plans, diagrams and charts, some in color. There is a section on "Trouble Shooting" with charts in color to enable the reader to locate quickly trouble about his car. The working principles of trucks and tractors also are illustrated and discussed. There are special instructions on testing and adjusting various parts of the automobile. This edition has been revised and enlarged. The author has endeavored to make the information readily available by including thousands of lines of index. The book has been encumbered somewhat, however, by the inclusion of two different indexes, an addendum and various folded inserts. There are many practical suggestions which will enable the reader to meet emergencies and to maintain a car.

Photodynamic Action and Diseases Caused by Light. By Harold Francis Blum, Ph.D. American Chemical Society Monograph Series, No. 85. Cloth. Price, \$6. Pp. 309, with 50 illustrations. New York: Reinhold Publishing Corporation, 1941.

This volume is a treatise on photodynamic action and radiation, both artificial and natural, on the human being and on animals. It deals with diseases produced in men and in animals by radiation. The book contains a generous review of the literature on this rather restricted branch of medicine and embraces material contributed by the author himself especially regarding the use of radiation in cancer. The volume is in four parts and has a total of twenty-four chapters. Part one, the introduction, deals with the physical nature of radiation and its biologic effects. The second part is on photodynamic action. Diseases produced by light on domestic animals and on man are dealt with in parts three and four, and this material should be of interest to the dermatologist. Mathematical and chemical equations are sprinkled here and there, together with a goodly number of tables and charts. One chapter is given over to the effects of long exposure to sunlight and its possible cause of cancer. For the skin specialist this work should be on the shelves of his library, but for the general practitioner it is recommended as a reference book.

Neurology: Lectures for Medical Students and General Practitioners. By Knud H. Krabbe, M.D., Chief-Physician, the Department of Neurology, Kommunehospitalet, Copenhagen. Translation by Gerda Seidelin, M.B. Paper. Price, 12 Danish kroner. Pp. 390, with 9 illustrations. Copenhagen: Ejnar Munksgaard; London: Oxford University Press, 1941.

The author is a distinguished Danish neurologist who has for a quarter of a century lectured to medical students. In this book he presents his lectures in their original form, in which the material is divided according to etiology rather than according to topography or in syndromes. It is a delightful little book to peruse, lucid in its descriptions, concise and yet fairly comprehensive for the needs of the student. Unfortunately the author has chosen to include psychiatric disorders, in which he gives a poor account of himself. Only Scandinavian literature is quoted. There are few illustrations, but an adequate index is appended.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

CORONARY THROMBOSIS AND VALVULAR HEART DISEASE

To the Editor:—Are there any statistics available as to the frequency of coronary thrombosis in persons with valvular disease, of the heart due to rheumatic fever?

M.D., New York.

ANSWER.—Adequate statistics of the incidence of coronary thrombosis in valvular disease of the heart have not been found. There are a number of reports which suggest that the incidence is low. In a paper by White and Jones on heart disease and disorders in New England (*Am. Heart J.* 3:302 [Feb.] 1928) there was an etiologic analysis of 3,000 cardiac patients. Of the 3,000 there were 956 who were rheumatic and only 18 of these had an additional diagnosis of coronary disease, but there was no statement as to how many had coronary occlusion. In a paper by Davis and Weiss on rheumatic heart disease (*ibid.* 7:146 [Dec.] 1931) it is stated that in 474 necropsies only 41 cases of rheumatic heart disease had an association with hypertensive coronary disease, coronary disease or severe anemia, but there is no statement as to how many of the cases showed coronary occlusion. There would seem to be few.

Coombs in his book on rheumatic heart disease had little or nothing to say about the complication of coronary disease, and that is true of most papers on the subject.

There is more information from the point of view of coronary disease. There again the incidence is low. For example, among 145 cases of coronary thrombosis reported by S. A. Levine in his monograph in 1929 there were no instances of true mitral stenosis and only 1 of aortic stenosis. He spoke, however, of having seen 1 case of coronary occlusion and definite rheumatic mitral stenosis not in his original group of coronary thrombosis. There were 14 cases with some degree of stenosis of the leaflets of the aortic valve as manifested by slight fibrosis, thickened atheromatous plaques or calcification. Similar changes were found in 4 cases in the mitral valve and in 1 case in the pulmonary valve.

In some unpublished data at one hospital, among 97 autopsies in cases showing acute coronary thrombosis there was only 1 with rheumatic heart disease. There was another with a calcareous aortic stenosis. In another group of 78 autopsies at the same hospital in cases of old myocardial infarction there was 1 case of rheumatic heart disease. In 31 cases of old coronary thrombosis without infarction there were 2 cases of aortic stenosis.

FASTING BLOOD DONORS—POOLING OF PLASMA OR SERUM

To the Editor:—I would appreciate some information on the following questions: 1. Is there any experimental or clinical substantiation for the statement that transfusion of "blood from a donor after ingesting food is followed by a transfusion reaction which is not to be expected in a fasting donor?" 2. In the transfusion of blood plasma or serum, are typing and cross matching necessary? Does it make any difference, in answering this question, whether the blood is from one donor or is pooled?

Gabriel Vandama, M.D., Habana, Cuba.

ANSWER.—1. If by "transfusion reaction" is meant a rise in temperature with or without a chill, there is no basis for the statement quoted. It is true, however, that a patient is more apt to have an urticarial reaction after the use of blood from a donor who has just eaten, provided the patient is allergic to one of the foods ingested by the donor. For this reason the routine use of fasting donors for transfusion has been advocated. If the blood is to be used for preparing plasma, the product will be much more turbid if the blood is taken from a donor after a meal than if taken from a fasting donor. Aside from the esthetic objections, it is impossible to recognize with the naked eye the presence of bacterial growth in turbid plasma.

2. The consensus is that if plasma (or serum) is prepared from individual samples of blood it is preferable to use only plasma of the same group as the patient's, since the indiscriminate use of untyped plasma would have the same objections as the indiscriminate use of the "universal donor." To eliminate the undesired isoagglutinins, several procedures have been advocated. Pooling the blood before separation of the plasma, as

recommended by certain investigators (Edwards, F. R.; Kay, James, and Davie, T. B.: *The Preparation and Use of Dried Plasma for Transfusion, Brit. M. J.* 1:377 [March 9] 1940), while efficient, has the disadvantage that the interaction between bloods of different groups may cause hemolysis, and hemolyzed plasma may cause a reaction. Therefore the approved procedure is to pool the plasma after separation from the blood. Best results are obtained with rather large pools containing ten or more samples, and with such pooled plasma the group of the patient can be disregarded. Pooling serves to diminish the titer of the isoagglutinins by two mechanisms (Levinson, S. O., and Cronheim, Anny: *Suppression of Iso-Agglutinins, THE JOURNAL, May 25, 1940, p. 2097*) (a) by simple dilution and (b) by neutralization of the isoagglutinins by group substances present in solution. With regard to the second mechanism, it is probably only minor, since the concentration of group substances in serum is low, in contrast, for example, to the concentration in saliva. In this connection Witebsky, KlenDshoj and Swanson (*Preparation and Transfusion of Safe Universal Blood, THE JOURNAL, June 14, 1941, p. 2654*) have recommended the addition of purified solutions of group substances A and B to blood of group O which is to be used for persons whose blood does not belong to group O, in order to neutralize the anti-A and anti-B agglutinins present in the blood. The routine addition of solutions of group substance to plasma would appear to make unnecessary not only grouping of the plasma but also pooling. In conclusion it may be remarked that in an emergency when plasma is at hand which has been prepared from only a single sample of blood this can probably be used with safety regardless of the group, provided the plasma is made to run into the vein slowly, since the extremely slow introduction of foreign agglutinins can be taken care of by the body without harm to the patient.

INDIGESTION AND SYNCOPE

To the Editor:—On Sept. 6, 1940 a patient fell while at work and fractured his skull. Roentgen examination showed a linear fracture at the base in the left occipital region. He is 73 years old and has been in good health, having worked at his present job for fifteen years. He fainted once at his work twenty years ago. His blood pressure is average for his age. At the time he fell he was standing at his bench brushing a hat which had been dyed the day before and was still somewhat wet. The case is before the compensation commissioner. The insurance company is attempting to prove that because the man had eaten cucumbers for supper the night before and had complained of some "indigestion" on arriving at the shop he fainted because of his indigestion, fell and fractured his skull. The insurance company called the shop doctor as its witness, and he testified that indigestion is a common cause of fainting. I was surprised at this, as I have never seen such a case. The patient ate cucumbers two or three times a week and suffered no ill effects. The accident occurred at 8:30 a. m. Would it be reasonable to expect cucumbers eaten for supper to cause indigestion the next morning? Can you give me any figures on the incidence of fainting among people with indigestion or supply me with references? Will steady focusing of the eyes of an old person with moderate arteriosclerosis (i. e. on near objects) cause vertigo or fainting? Eric Ernst Stietzel, M.D., South Norwalk, Conn.

ANSWER.—The fact that the patient had previously eaten cucumbers two or three times a week without ill effects suggests that they were not the primary cause of the "indigestion." The role played by the cucumbers is problematic. It is not clear when the dyspeptic symptoms first occurred in relation to the evening meal. If the onset was within a few hours and the symptoms persisted until the next morning, the cucumbers may have been a contributory factor. If the onset, however, was about twelve hours later, the "indigestion" may well have occurred had no cucumbers been eaten the previous night.

Figures cannot be given for the incidence of fainting in those with digestive disturbances. "Indigestion" is a vague descriptive symptom which may result from a variety of digestive diseases and disturbances, as well as from numerous conditions outside the digestive tract, such as coronary occlusion, migraine or a hyperactive carotid sinus reflex (Eusterman, G. B., and Balfour, D. C.: *The Stomach and Duodenum, Philadelphia, W. B. Saunders Company, 1935, pp. 111-137*). When syncope occurs it may be coincidental or caused by the same organic condition that is responsible for the "indigestion." In the latter event the incidence of fainting depends entirely on the nature of the primary disease.

When demonstrable organic disease is not found after a thorough physical, laboratory and roentgenologic examination to explain satisfactorily the "indigestion," it is often attributed to a functional digestive disturbance. Syncope may be coincidental in such persons or it may occur during attacks of acute nonspecific enteritis with severe abdominal cramps and diarrhea. Vertigo and fainting attributed to eyestrain often appear under circumstances in which it is difficult to evaluate the etiologic importance of the eyestrain. The type and degree of

refractive error, if uncorrected, must be taken into consideration. Standing in one position for a time is not only a predisposing factor but may in itself result in syncope. Hunger, fatigue, malaise and various debilitated states also may produce syncope. When a number of these factors are present at the time of fainting, as was apparently the case in the instance cited, it is often difficult, if not impossible, to say which was the precipitating cause.

REACTION TO PITRESSIN

To the Editor:—A woman aged 51 was in excellent general condition five days after removal of a stone from one kidney pelvis except that she was somewhat distended with gas. Laxatives, enemas and the colon tube gave no appreciable relief. Ten units of pitressin was given hypodermically, followed fifteen minutes later with a soap-suds enema. The results were moderately beneficial and there was no deleterious effect. About ten hours later, as the patient was again somewhat distended with gas, the same orders were repeated. Within a few minutes after administration of the pitressin the patient became pale, felt faint and expelled a large amount of gas. The enema was given a few minutes later and was promptly expelled with a small amount of soft stool and a great abundance of gas, which left the abdomen completely relieved of distention. The patient was seen a few minutes later and was found to have a severe pallor, slight dyspnea with respiration about 30, pulse and heart rate 100, and blood pressure 130 systolic and 70 diastolic. The patient stated that she felt faint. The general picture was not such as to cause alarm except for the deathlike pallor and the fear that the mild shock—if such it was—would become progressively worse. The foot of the bed was elevated and 500 cc. of 10 per cent dextrose solution with 10 units of insulin was promptly started intravenously but administered slowly. Within a few hours the patient's condition was normal. Please explain the action of pitressin and why this second administration caused such a severe reaction when a like amount given ten hours earlier caused no reaction at all. Did the rapid collapse of the bowel cause a splanchnic congestion?

Andy Hall Jr., M.D., St. Louis.

ANSWER.—Pallor is frequent following the administration of pitressin. Kirklin and Seedorf (*Ann. J. Roentgenol.* 42:811 [Dec.] 1939) found it in 81 per cent of patients given pitressin preliminary to cholecystography. The pallor in itself is a manifestation of vasoconstriction in the skin. The vasoconstrictor effect, however, is usually generalized, leading to a variety of symptoms in addition to those resulting from increased bowel activity. The total reaction, therefore, may at times cause alarm. Because the pallor is often so striking, it may suggest that the patient is in shock. This, however, is rarely if ever the case.

Pitressin pallor gives little indication of the severity of the reaction. In fact, it is difficult to evaluate pitressin reactions at the time they occur. The symptoms, however, almost invariably subside spontaneously within a few hours and there is no apparent deleterious after-effect.

A number of competent observers have found that pitressin often causes a decrease in blood pressure. The mechanism of the simultaneous generalized vasoconstriction and fall in blood pressure is not entirely clear. There is evidence to indicate that the coronary arterioles constrict with a consequent decrease in the minute volume output of the heart. This may explain the seemingly paradoxical action of pitressin, but other factors are probably involved as well. The fall in blood pressure is usually not marked when pitressin is given intramuscularly or subcutaneously and is of interest chiefly because the term "pressor principle" is misleading in this respect.

Melville (Pressor and Oxytocic Fractions of Posterior Pituitary Extract: Comparative Effects on Blood Pressure and Intestinal Activity, *THE JOURNAL*, Jan. 11, 1936, p. 102) found that a marked drop in blood pressure and collapse occurred in unanesthetized dogs following the intravenous administration of moderate amounts of the pressor constituent of posterior pituitary. This effect would be lessened or abolished when the oxytocic principle was given simultaneously in sufficient dosage. These observations may explain some of the apparently conflicting reports in the literature.

Great variation in the response of the same individual to the same dose of a biologic preparation is rather common, and pitressin is no exception. In the clinical use of pitressin a "maximal" effect is seldom obtained. It is not clear what determines the degree or type of reaction. Melville found pitressin to be consistent in its effect in unanesthetized dogs when given intravenously. When administered by other routes, however, the effects were so variable that no definite conclusion could be reached.

The rapid collapse of the bowel might conceivably have been a factor; however, this seems unlikely in view of the fact that the same type and degree of reaction is frequently seen in patients without evidence of unusual abdominal distention.

It would appear, therefore, that the patient under consideration experienced a reaction to pitressin within the limits of the reactions frequently seen.

HYPERTENSION AND POSSIBLE CUSHING'S SYNDROME

To the Editor:—A young woman complains only of a slight increase in the menstrual flow and slight nervousness. She has hypertension, the cause of which has not been determined. The possibility of Cushing's syndrome, possible pituitary hyperactivity, anterior or posterior, or of some condition for which a remedy may be had, is considered. She has had the usual diseases of childhood but not scarlet fever or diphtheria. At the age of 18 the right ovary was found to be cystic and was removed to correct a menorrhagia. The blood pressure was not recorded at that time, but the urine was normal. The patient has no other complaints. She is well developed and weighs 129 pounds (58.5 Kg.). The face is of full moon type. This effect has somewhat increased during the last year with the patient's gain in weight from 115 pounds (52 Kg.) but there is no suggestion of bull neck. The blood pressure is 170 systolic and 114 diastolic, the pulse rate 122, the respiratory rate 20 and the temperature normal. The eyes are prominent but not exophthalmic. The thyroid is not palpable. The lungs are normal. The heart is not enlarged. There is a suggestive systolic shock but no thrills. The aortic second sound equals the pulmonic second. There is a definite presystolic roughness followed by a loud overactive first sound which strongly suggests mitral stenosis. On fluoroscopy there is no enlargement of the left auricle or any other chamber; the aortic knob is present. There is no prominence of the pulmonary conus. The abdomen is normal except for the operative scar. The liver and spleen are not palpable. The secondary sexual characteristics are well developed. While the heart sounds are strong and overactive, the pulse is rather weak but definitely palpable bilaterally. It is regular. The blood pressure in both arms is 170 systolic and 114 diastolic and in both legs at the popliteal fossae 200 systolic and 140 diastolic. Ophthalmoscopic examination reveals only slight spasm of the retinal arterioles. The radials are not definitely sclerotic. The blood count is normal, as is also the urinalysis. Exton's sugar tolerance studies revealed a fasting blood sugar of 83 mg.; thirty minutes after 50 Gm. of dextrose the blood sugar was 110 mg.; 50 Gm. more of dextrose was administered at this time and one-half hour later the blood sugar was 109 Gm.; one hour after this the blood sugar fell to 69 Gm. (checked twice). Basal metabolic studies revealed plus 16 and plus 19 per cent. After two weeks of bed rest and compound solution of iodine the basal metabolic rate fell to minus 5, but the pulse remained the same, 120 both at the office and while at rest at home. The heart tones have not changed, and the overactivity is still present with the same pulse of rather poor volume. With one exception of a blood pressure of 150 systolic and 90 diastolic the pressure remains between 170 systolic and 114 diastolic and 180 systolic and 120 diastolic. On exercise the heart rate rose to 136 and returned to 120 after one minute. There was no undue respiratory discomfort. Friedman's pregnancy test was negative. The electrocardiogram was normal except for the tachycardia and low R_s. The intravenous diodrast test was unsatisfactory. The roentgenograms showed no osteoporosis of the pelvic bones as one finds in Cushing's syndrome. Please suggest diagnosis and treatment.

David Scheinberg, M.D., Memphis, Tenn.

ANSWER.—Hypertension in a young woman is usually due to a chronic glomerulonephritis, pyelonephritis, polycystic kidneys, coarctation of the aorta or the condition called "essential hypertension" because of the absence of demonstrable primary disease. Transitory emotional hypertension and menopausal hypertension are apparently excluded in this case. The normal urine and renal function tests rule out chronic nephritis and pyelonephritis, while the elevated systolic blood pressure in the popliteal arteries eliminates coarctation of the aorta as a diagnostic possibility. Polycystic kidneys, unilateral atrophic pyelonephritis and a fair sized tumor of the adrenal cortex could scarcely be excluded without a retrograde pyelogram. Therefore this procedure is definitely indicated, especially in view of the unsatisfactory intravenous pyelograms. The masculinizing tumor of the ovary, or arrhenoblastoma, has little in its favor in this case.

There is insufficient basis for a diagnosis of Cushing syndrome. The result of the dextrose tolerance test and the normal menstruation speak against it. For the sake of completeness, it would be worth while to determine the value of the serum sodium, potassium, bicarbonate and chloride. A high serum sodium and bicarbonate content with a low potassium level suggest hyperfunction of the adrenal cortex. Diminished concentration of urinary chloride—below 0.4 per cent—in the last four hours of a fifty-two hour period during which the patient is on a diet containing only 1.5 Gm. of sodium chloride and 4 Gm. of potassium but also receiving 10 Gm. of sodium chloride in capsules twice daily for two days, with the fluid intake at 20 cc. per kilogram of body weight for the first two days and only 5 cc. per kilogram during the four hours of the urine collection, would be supporting evidence for a Cushing syndrome (Cantarow, Abraham: *Science* 90:375 [Oct. 20] 1939). Probably further observation of the patient for six months or a year will allow the development of more definite signs or the establishment of a diagnosis of "essential" hypertension.

Treatment depends on the diagnosis. Sufficient evidence for tumor of the adrenal cortex or arrhenoblastoma warrants surgical exploration. General hygienic measures, mild sedation with phenobarbital and prevention of further gain in weight are indicated, in addition to any necessary symptomatic treatment.

SIGNIFICANCE OF ERYTHROCYTE SEDIMENTATION RATE

To the Editor:—1. What is the significance of a change from normal in sedimentation rate in the blood of an adult? 2. What effect does an acute suppurative process such as an acute abscess have on the sedimentation rate? 3. What effect does a chronic infective process such as chronic tonsillitis or abscessed teeth have on the sedimentation rate?

M.D., Wisconsin.

ANSWER.—1. An increase in the sedimentation rate of red blood cells is usually correlated with an abnormal increase in the concentration of globulins of the blood plasma, especially plasma fibrinogen. An abnormal elevation in the concentration of plasma fibrinogen and in the sedimentation rate is one of the most frequent responses of the body to a variety of noxious stimuli such as tissue inflammation or destruction, whether traumatic, chemical, bacterial or neoplastic. It may be increased after the injection of foreign protein, small doses of liver poisons and damage from roentgen rays. Physiologically, fibrinogen production is increased in normal pregnancy. Occasionally the sedimentation rate is increased above normal associated with an elevation of the concentration of serum globulins in such diseases as cirrhosis of the liver, multiple myeloma and chronic infection. An abnormally slow sedimentation rate is not a satisfactory measure of plasma proteins and can be interpreted only as compatible with normal. For a more complete discussion of the subject, see Ham, T. H., and Curtis, F. C.: *Medicine* 17:413 and 447 (Dec.) 1938.

2. An acute suppurative process usually produces an elevation in the sedimentation rate and in the plasma fibrinogen level after the third or fourth day, especially if there are generalized manifestations from the abscess. A localized abscess may not increase the sedimentation rate.

3. In general, chronic inflammatory processes such as chronic tonsillitis or abscessed teeth do not produce an elevation of the sedimentation rate. So-called focal infections influence the sedimentation rate more or less in proportion to the nature and severity of the pathologic process. Chronic localized infections may have no influence, whereas chronic infections characterized by exudative inflammation such as pelvic inflammatory disease, tuberculosis and chronic bronchitis may cause significant increase in both plasma fibrinogen and the sedimentation rate. For further details, see Wintrobe, M. M.: *M. Clin. North America* 21:1537 (Sept.) 1937.

HYPERSENSITIVITY TO SOAPS

To the Editor:—An intelligent housewife, aged 42, appears to be sensitive to alkalis. Soaps used in washing dishes or for any other purpose irritate the nose and eyes, produce an eczematous rash, and once appeared to be the cause of a severe conjunctivitis difficult to overcome. If washing is done in the basement and the woman stays in another part of the house, she is still distressed. She has tried almost all brands of soap and finds little difference in them, but chip soaps give less trouble than bar soaps and Lux chips somewhat less than other kinds. A consultant specializing in allergy advised large doses of vitamins A and C. The treatment was used two months with doubtful results. Has any treatment been devised that might be helpful for this condition?

Charles W. Carter, M.D., Clinton, Ill.

ANSWER.—Hypersensitivity to soaps may be of two types: 1. Soaps may act as primary irritants for some skins and mucous membranes, largely because of their alkali content. 2. There may be a specific hypersensitivity due to one or more of the various ingredients of soap, especially cottonseed and flaxseed oils, used in the manufacture of some soaps. The advice given in this case (large doses of vitamins A and C) was presumably based on the hope of an increase in tolerance to these substances by nonspecific means. Unfortunately, in most cases, as in this, no such general method of therapy has been found which is dependable. Nor is there any reliable method of specific desensitization against hypersensitivity to soap.

The emphasis in this inquiry on soaps used in laundering suggests that either a large dose is necessary to produce symptoms or that the fine powder of soap is more effective in producing symptoms. Careful measures for avoidance of soap contacts in the form causing irritation is the only practical advice that can be given. It would be advisable to put the soap chips gently into the water to avoid the spread of the powder into the air. The basement room in which this is done should be closed off from the rest of the house to avoid air currents through ducts, doors or windows. An inspection of the home itself might suggest the best location for introducing the soap into the water and avoiding the spread of the powder to the rest of the house. After the soap is dissolved, the spread of soap particles into the air may result

from violent agitation of the water, unless this is done in a closed room. Probably the best procedure, however, would be to send the clothes out to be washed.

TONSILLITIS IN DOGS AND HUMAN BEINGS

To the Editor:—My daughter, aged 23 months, has been ill once a month for the past few months with tonsillitis. She is ill about five days at a time and has the usual mixed throat culture. I should like to know whether my shepherd dog could be the transmitting object in this condition? Like all dogs, he is fond of licking. What is the advisability of tonsillectomy at this age and season?

M.D., Connecticut.

ANSWER.—Dogs suffer from acute sore throat and acute tonsillitis. Strains of streptococci isolated from acutely ill animals can produce sore throat experimentally in other animals. There is little evidence, however, that dogs can be responsible for acute sore throat in human beings. Pilot states that the bacterial strains producing tonsillitis, canine and human, are not alike. Hence in all probability the pet shepherd dog is not responsible for the child's illnesses. In fact, many children suffer from numerous attacks of tonsillitis in homes where there are no pets of any kind.

It is reasonable to contemplate tonsillectomy even though the child is rather young for this operation, for the attacks of sore throat are frequent and appear to be severe. The colder season is not as desirable as warmer and more settled weather, but in the last analysis the proper indications for operation become matters of judgment for each individual case.

Reference:

Pilot, Isadore; Buek, C.; Davis, D. J., and Eastman, D. A.: Tonsillitis in Dogs Due to Hemolytic Streptococci, *Proc. Soc. Exper. Biol. & Med.* 34:499-502 (May) 1936.

EMERGENCY TREATMENT OF BURNS

To the Editor:—What would be the best emergency treatment to give a patient who has just sustained a severe second and third degree burn—the treatment to be given in the home or at the office while waiting for the ambulance? (The nearest hospital here is 10 miles away.)

M.D., Illinois.

ANSWER.—In the emergency treatment of burns, the most important early consideration is the relief of pain and the treatment of shock. When a person suffers an extensive burn, attempt should not be made to remove clothing. The patient should be covered with warm blankets and an effort made to conserve body heat. Sterile sheets and clean blankets should be carried in emergency kits designed for the treatment of burns. Warm fluids should be given by mouth. Pain should be relieved by adequate doses of morphine sulfate. Seriously burned patients may be immersed in a tub of warm water the temperature of which is from 95 to 100 F. This is done without removing the clothing. This procedure has the effect of supplying external heat and also of allaying pain.

When extensive burns occur on uncovered areas they may be treated as an emergency measure by the application of large wet dressings of sodium bicarbonate solution 10 per cent. Sodium bicarbonate may be kept in the emergency kit in any amounts which, when mixed with stated amounts of sterile water, will give the proper solution. For instance, 100 Gm. of sodium bicarbonate to 1 quart of sterile water makes a 10 per cent solution. The application of wet dressing of this type does not interfere with the subsequent treatment of the wound by other methods which the attending physician may prefer.

TULAREMIA AND IMMUNITY

To the Editor:—Does an attack of tularemia confer a lasting immunity? A patient had it last fall. He will not do any more hunting if there is a possibility of again contracting the disease. I find no information on the subject in textbooks.

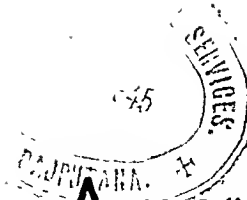
M.D., Illinois.

ANSWER.—One attack of tularemia confers permanent immunity.

SINUS PERICRANII

To the Editor:—I should like to take issue with the statement on page 236 of *The Journal* for July 19, 1941 to the effect that "sinus pericranii is seen only in conjunction with tumors of the brain." A sinus pericranii is seen only in conjunction with tumors of the brain. A sinus pericranii is a saccular cavity, often loculated, lying between the scalp and the skull usually in the neighborhood of the superior longitudinal sinus. These although I have seen one in relationship to the lateral sinus. These blood filled cavities usually communicate with the underlying sinus through an emissary vein of variable size. The contents may be fluid, in which case the cavity can be emptied by prolonged external pressure or they may be coagulated. Sinus pericranii is a congenital condition usually detected during early childhood, and is in no way related to intracranial tumors. Perhaps in this answer sinus pericranii was confused with dilatation of the extracranial venous network, which is not uncommonly seen in small children in association with intracranial hypertension.

Paul C. Bucy, M.D., Chicago.



The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 117, No. 8

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CHICAGO, ILLINOIS

AUGUST 23, 1941

SOME IMMEDIATE PROBLEMS FACING THE RADIOLOGIST

CHAIRMAN'S ADDRESS

RAYMOND C. BEELER, M.D.

INDIANAPOLIS

One does not have to put one's good ear to the ground to hear the rumbling sound of sudden changes and world shaking events. That these are extremely troubled times throughout the world goes without saying. It is evident that America has emphatically to assume again the role of a vigorous world power in order to remain the permanent sanctuary of certain genuinely American ideals; that, whether we like it or not, America is destined to complete the task it should have completed twenty years ago and to become, as it surely is fitted and capable of becoming, the dominant director of the nations of the world. Whether this is the actual shape of things to come for this country, time alone will tell. It hardly seems that it can be otherwise, however, as America now enters on the world scene with full mobilization of her military and her industrial resources.

What has this by-pass into the world picture to do with the subject of this paper? Primarily this: Revolutionary epochs necessitate great changes, great adjustments, great dangers and a multitude of problems. We are living in such an epoch. If we do not realize this at the outset, we can have no proper perspective of all our present day problems.

American medicine, especially in its nontechnical divisions, has gigantic problems facing it on every hand. There are economic, legal and organizational problems pertaining to national defense. American radiology as one of the very technical and complex subdivisions of American medicine shares each of the major issues facing the whole of organized medicine but, in addition to these more general problems, it has a considerable number of difficulties peculiar to its own domain. The first of these problems I wish to consider is whether or not medical radiology is to become simply a state or federal operated laboratory procedure.

The revolutionary changes in American economic and social thought over the past several years have presented American medicine with the most trying days in all its postwar history. The wide swing of the pendulum of political, legislative and even judicial thought in the United States toward socialist and collectivist doctrines has enveloped the medical profession in a legal battle the outcome of which cannot fail to have far reaching consequences for us all.

Radiology is in the most forward echelon of this conflict, placed there by the complex nature of its equip-

ment and technics and its absolute indispensability to all institutions furnishing complete medical care. It is determined not to become merely a federal or state controlled laboratory procedure. That this problem has perilously endangered our branch of the healing art arises from certain conditions and situations that have made our group especially vulnerable. We have been in the vanguard in every struggle tending to force wider and wider development of hospital insurance plans to include special medical service. The roentgenologist, the pathologist and the anesthetist have borne the brunt of the battle to date against the strenuous attempts of group hospitalization insurance plans to include radiology and other medical service in their insurance coverage.

The momentum gained by group hospitalization insurance programs, movements known as medical service plans, sickness insurance and so on, together with the gigantic inroads made by the federal government in the field of cancer diagnosis and treatment, has placed us in the greatest jeopardy. Unquestionably, the radiologist and his specialty are being used as an opening wedge through which other branches of medical practice are to be pushed for the future hospital domination over the practice of medicine. It makes little difference whether the hospital administrator, executive or superintendent is operating for a large metropolitan group hospitalization plan or is a member of the ever increasing federal bureaucracy now preparing to extend its functions into actual diagnosis and treatment of cancer; the prime objective seems to be to override any admittedly rational arguments of professional unsoundness in their plans by pouring on the public a constant din of half truths concerning the economically profitable nature of the proposed plans.

Are we going to be able to convince the public that more formidable progress against cancer can be achieved by private radiologists than under bureaucratic federal clinics? Can we convince the public that private radiologists are better qualified to prescribe the correct roentgenographic or therapeutic procedure than the most prominent hospital insurance executive? It would seem that no such task of convincing the public ought to be necessary, but a vast portion of the opposition is politically inspired, politically subsidized and politically controlled. The problem seems gigantic and overwhelming. It can be solved and our mission can be accomplished only if we close ranks, if the individual radiologist will forsake selfish considerations and join with the majority opinion of his colleagues for the duration of our emergency, prove to the public that we are not in any disagreement among ourselves and inform and educate as rapidly as possible any of our confrères who may still be unaware of what is going on and where these radical trends are taking us.

Remarkable advancement has been made lately in the field of radiology as it relates to technics developed for

rapid and economic roentgen studies of the chest, suitable for extensive surveys of large groups of persons. The great need and desirability of an accurate and economical technic for such work is recognized by every one and is not limited to the tuberculosis worker or the public health specialist. But here again a major problem is presented to us with both an economic and a technical aspect. The prime difficulty arises from the fact that because such a method for wide scale roentgenographic chest studies has been brought to the present state of development the forces who will gain most from its correct and accurate use cannot wait longer for further perfection of the technic. They clamor for wholesale chest studies while the technic they wish admits of a degree of error far greater than these zealous guardians of the public health would tolerate in any other procedure. Yet, because radiologists wish to proceed more cautiously and hence more scientifically, they are put in the disagreeable position of appearing to hold up the development and widespread application of fluorography and miniature roentgenograms (so-called 4 by 5 films). No one will claim that this method is completely perfected today. The checking of errors by conventional roentgenography is still required. The necessary preliminary accumulation of statistical data and thorough studies into the limits of the method were not allowed to be brought to a conclusion before a wholesale demand for the general use of miniature roentgenograms was made by certain groups—largely the hyphenated lay-medical agencies engaged in tuberculosis work, military induction boards and certain public health divisions.

An urgent plea is made for careful, painstaking development of this work with due regard to all its aspects, scientific accuracy, economic fairness to the individual patient in the survey group and to the radiologist performing the work and interpreting the roentgenogram and, above all, a holding off of hurried and ill considered utilization of the method simply because partially informed groups with loud voices want a mass method used on all the masses before that method is thoroughly perfected.

Another important problem which radiologists have to consider is the fact that certain manufacturers of roentgen ray equipment are willing and anxious to sell equipment to unqualified practitioners of medicine. The fact that many general practitioners have been led to believe that the installation and operation of a roentgen ray unit and the proper interpretation of films made with it is as simple a matter as ordering, installing and using an electric sterilizer is due for the most part to the avid commercialism of numerous smaller, unethical supply houses and roentgen ray manufacturers. Their number has increased greatly of late and their clientele includes as well the chiropractor, the naturopath and the electrotherapist. The outstanding feature of their work is their unique job of salesmanship. They have convinced certain physicians that, first, such a complex piece of electrical engineering requires only the knowledge needed to snap a button on and off and, second, that with the film made so easily its correct interpretation is a matter of even less effort. How they can convince their buyer that roentgen therapy requires no more than mail order knowledge I have never been able to understand.

That this is an ever growing menace is self evident to all of us assembled here. That this is a very real danger, let me cite a case with which I am familiar: Mr. A, a representative of an ethical and reliable roent-

gen ray manufacturing firm, was recently called to the office of physician X, whose apparatus had suddenly ceased to function. On going over the apparatus, Mr. A discovered that the machine showed unmistakable signs of having either been operated at extremely high milliamperage or having been used for extremely long exposures. Dr. X emphatically stated that during the three months he had possessed the machine he had used it no more than four or five times and then for but five to ten seconds for fluoroscopic work only. Closer inspection of the equipment showed that, while these examinations were being made by Dr. X, the machine had been operating at 15 to 20 milliamperes, and still closer scrutiny showed not even a piece of plate glass for protection in the fluoroscopic screen. Simply the fluorescent screen and no glass whatever. Mr. A began inquiring of Dr. X whether he had noted any changes about the skin of his face or hands. The doctor stated "Now that you mention it, I had noticed my eyes would have the most peculiar burning sensation in them a few hours after each fluoroscopic examination." Was it not a fortunate thing that the physician's apparatus failed to operate one day before he had suffered further injury?

Caveat emptor is the legal phrase in commercial law demanding that the buyer beware. For physicians foolish enough to feel that combined general practice and radiology is the field for them, there is no phrase, legal or otherwise, with which to warn them.

Aside from the possibility of the inherent physical dangers to both the general practitioner and his patient, many physicians seem totally unaware of the gigantic technical strides made in radiology since Roentgen's remarkable discovery. Radiology is no longer of such compact size or simplicity as to be considered an adjunct or sideline to any other branch of medicine. This seems too commonplace a statement to require mention, but it is amazing how many general practitioners and even certain specialists have failed to realize the many intricate subdivisions already required within the field of radiology. It is readily understood that organized radiology requires a prolonged training period for those anxious to be qualified members in it. Also that any one not taking the required course and time in preparation for the proper understanding of this science is little more than an impostor.

Last but not least of these questions before roentgenologists today is the rapid increase in size, cost and complexity of the apparatus required to perform thorough work in our field. It puts a complicated financial problem to the recently qualified young radiologist anxious to enter on the practice of his chosen specialty. The huge initial cost of equipment, high rental fee for the large office or floor space required for it, cost of expandable supplies needed, such as films and chemicals for processing them, darkroom apparatus and filing and record equipment all in addition to the salary expense of necessary clerical and technical assistants make the young radiologist's problems greater than those of any other beginning specialist. Many hospitals have taken advantage of this financial dilemma of the young radiologist to maneuver him into a position of semidependence. To be sure, not all hospitals are to be so indicated, but it has been one of the paramount means whereby certain of them have been enabled to preach the heresy of radiologic service being part and parcel of hospitalization and so through their group hospitalization insurance plans place our specialist in

the predicament discussed as problem one at the beginning of this paper.

The opportunities afforded competent radiologists to enter practice are still great. As long as medical practice in the hospitals remains medical practice and does not become hospital practice, many institutions can supply opportunities for certified radiologists. In fact, many hospital radiologic departments could double or triple the number of certified men on their present staffs with much benefit both to patients and to the visiting staff. Additional opportunities are to be found for the young radiologists throughout the smaller communities in numerous small county hospitals. No competent young radiologist need feel that this apparent financial obstacle is insurmountable, for the competent man can make his way as always.

In closing, I wish to remind you that only a few of the problems facing the members of our section have been discussed. Those of the greatest importance are being discussed by authoritative contributors to the various radiologic publications, men who are endeavoring to maintain our security now and to marshal all our available strength for the battles that lie ahead.

The important task for us all is to exert our utmost efforts, individually and collectively, to make the majority opinion of our specialty and of all organized medicine prevail, so that medical practice will continue to be run by medicine and radiologic practice by radiologists despite the tremendous upheavals occurring in the world about us.

23 East Ohio Street.

TREATMENT OF SEPTIC THROMBOPHLEBITIS OF THE CAVERNOUS SINUS

CHAIRMAN'S ADDRESS

LEROY A. SCHALL, M.D.

BOSTON

One of the most fatal complications occurring in otolaryngology is that of septic thrombophlebitis of the cavernous sinus. Previous to the advent of chemotherapy Eagleton¹ was able to report but 3 recoveries by surgical methods out of 25 cases. Browder and Myerson² had a recovery after introducing a sterile clot proximal to the infection. Grove³ surveyed the literature and came to the conclusion that septic thrombophlebitis of the cavernous sinus was practically 100 per cent fatal. Since the introduction of chemotherapy isolated case reports of recovery are beginning to appear in the literature. Barnshaw,⁴ Seydell⁵ and Pace⁶ each report a recovery following the use of sulfanilamide and Morrison and Schindler⁷ one after the use of sulfapyridine.

Read before the Section on Laryngology, Otology and Rhinology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 5, 1941.

1. Eagleton, Wells P.: Cavernous Sinus Thrombophlebitis, New York, Macmillan Company, 1926.

2. Browder, Jefferson, and Myerson, M. C.: A Surgical Method for the Prevention of Thrombophlebitis of the Cavernous Sinus, *Arch. Otolaryng.* 21: 574 (May) 1935.

3. Grove, W. E.: Septic and Aseptic Types of Thrombosis of the Cavernous Sinus, *Arch. Otolaryng.* 24: 29-50 (July) 1936.

4. Barnshaw, H. P.: Report of a Case of Bilateral Cavernous Sinus Thrombosis: Recovery Without Operative Intervention, *J. M. Soc. New Jersey* 36: 22 (Jan.) 1939.

5. Seydell, E. M.: Recovery from Thrombosis of the Cavernous Sinus, *Arch. Otolaryng.* 30: 429 (Sept.) 1931.

6. Pace, Errett: Thrombosis of the Cavernous Sinus, *Arch. Otolaryng.* 33: 216 (Feb.) 1941.

7. Morrison, Lewis F., and Schindler, Meyer: Cavernous Sinus Thrombosis: Report of Recovery Following Sulfapyridine Therapy, *Arch. Otolaryng.* 31: 948 (June) 1940.

That there are two types of thrombosis of the cavernous sinus, the one septic and the other sterile, has been accepted clinically and proved at autopsy.⁸ My discussion will be limited to the septic type exclusively. The anatomy of the cavernous sinus has been



Fig. 1 (case 1).—Patient's appearance at the time of admission.

described by many authors⁹ and will not be reviewed again. The routes of extension of septic processes to the cavernous sinus have been well described by Eagleton.

To establish the diagnosis of septic thrombophlebitis of the cavernous sinus, Eagleton¹ proposed the following diagnostic criteria:

1. A known site of infection.
2. A blood stream infection.
3. Early signs of venous obstruction.
4. Involvement of the nerves in the sinus.
5. Neighborhood abscess of the soft parts.
6. Symptoms of complicating disease.

It has been my privilege to observe 3 cases of septic thrombophlebitis of the cavernous sinus presenting a symptomatology that fulfilled the criteria as established by Eagleton. In these 3 cases recovery occurred following the use of chemotherapeutic agents combined with heparin. That heparin is an important adjunct in treatment is demonstrated by case 2, in which the cavernous involvement developed while the patient was under treatment with chemotherapeutic agents for a nasal furunculosis.

The use of heparin in conjunction with chemotherapeutic agents was suggested to me by Dr. Champ Lyons of the Massachusetts General Hospital, and the treatment was carried out under his direction. The first 2 cases have been reported by Lyons.¹⁰ To the best of our knowledge, these cases of septic thrombophlebitis of the cavernous sinus were the first in which therapy with these agents was given.

In discussing the use of heparin, Bancroft¹¹ speculates: "For the septic processes occurring in association with otolaryngology, it would seem advisable to combine chemotherapy with heparin. The combination

8. Lewis, E. R.: Cavernous Sinus Thrombosis with Recovery Proved by Necropsy, *Ann. Oto Rhino-Laryng.* 43: 1084-1090 (Dec.) 1934.

9. Eagleton,¹ Browder and Myerson,² Grove,³ Morrison and Schindler.⁷

10. Lyons, Champ: The Treatment of Staphylococcal Cavernous Sinus Thrombophlebitis with Heparin and Chemotherapy, *Ann. Surg.* 113: 113 (Jan.) 1941.

11. Bancroft, Frederic W.: Use of Anticoagulants in Cases of Post-operative Thrombosis and Embolism, *Arch. Otolaryng.* 32: 934 (Nov.) 1940.

of the sulfanilamide group and heparin should aid in prevention of spread of septic emboli and in stabilization of the clot when it is impossible to ligate the vein proximally."

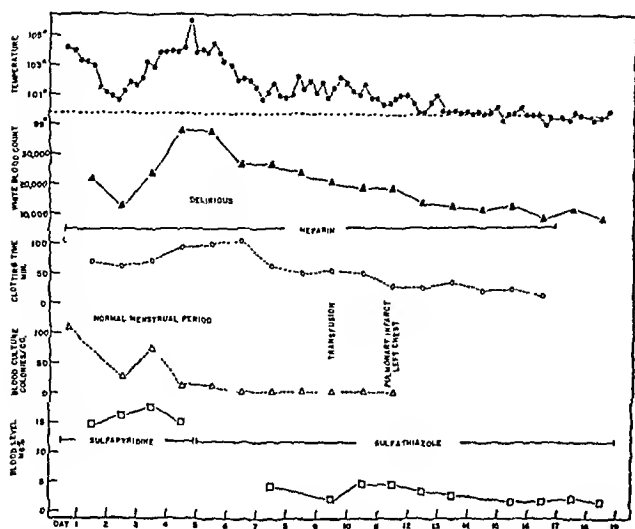


Fig. 2.—Course of temperature, white blood cell count, clotting time, blood culture (colonies per cubic centimeter) and treatment in case 1.

Heparin is a strong organic acid, probably a mucoitin trisulfuric acid, discovered and described by Howell.¹² It was first isolated from liver, and investigations gave support to the view that it is a normal constituent of

by Schmitz and Fischer¹⁵ have rendered heparin safe to use in man.

Early experiments showed that heparin has a distinctive effect in preventing the coagulation of the blood. Howell advanced the theory that it is the inhibiting factor responsible for the fluidity of the blood, that it is not an antithrombin but that it prevents coagulation by a reaction with prothrombin, which interferes with the activation of prothrombin to thrombin. Murray¹⁶ reached the deduction that heparin also has an important effect on blood platelets in that it prevents their clumping and thereby prevents thrombosis.

Heparin has now been used in many conditions in which thrombosis is a factor—surgery of blood vessels,¹⁷ venous grafts,¹⁸ embolectomy,¹⁹ periphlebitis,¹¹ malignant endocarditis²⁰ and sudden vascular occlusion.¹¹



Fig. 4 (case 2).—Patient's appearance at the time of admission.



Fig. 3 (case 1).—Patient's appearance nine weeks after admission.

the blood plasma. Improved methods of extraction and purification by Howell,¹³ by Charles and Scott¹⁴ and

Heparin is administered by a constant intravenous saline drip. Usually 1,000 units of heparin, i. e., 10 mg., is added to each 100 cc. of saline solution. The saline and heparin solution is permitted to run into the patient's vein at such a rate that the clotting time of the patient's blood is maintained at the desired level.¹⁰ In these cases the clotting time of the blood was maintained at about ninety minutes as determined by the five tube method.

15. Schmitz, Adolf, and Fischer, Albert: Ueber die chemische Natur des Heparins. 11. Die Reindarstellung des Heparins, *Ztschr. f. physiol. Chem.* **216**: 264-273 (May 3) 1933.
16. Murray, D. W. G.; Jaques, L. B.; Perrett, T. S., and Best, C. H.: Heparin and Thrombosis of Veins Following Injury, *Surgery* **2**: 163 (Aug.) 1937.
17. Murray, D. W. G.: Heparin in Surgical Treatment of Blood Vessels, *Arch. Surg.* **40**: 307 (Feb.) 1940. Murray, Jaques, Perrett and Best.¹⁰ Bancroft.¹¹ Murray and Best.¹³
18. Murray, D. W. G., and Best, C. H.: Heparin and Thrombosis: The Present Situation, *J. A. M. A.* **110**: 118 (Jan. 8) 1932. Bancroft.¹¹ Murray.¹⁷
19. Murray.¹⁷ Murray and Best.¹³
20. Kelson, Saul R., and White, Paul D.: A New Method of Treatment of Subacute Bacterial Endocarditis, *J. A. M. A.* **112**: 1762 (Dec. 4) 1939.

12. Howell, W. H.: Two New Factors in Blood Coagulation—Heparin and Proantithrombin, *Am. J. Physiol.* **47**: 328 (Dec.) 1918.
13. Howell, W. H.: The Purification of Heparin and Its Presence in Blood, *Am. J. Physiol.* **71**: 553 (Feb.) 1935.
14. Charles, A. F., and Scott, D. A.: Studies on Heparin: IV. Observations on the Chemistry of Heparin, *Biochem. J.* **20**: 1927-1933 (Oct.) 1936.

REPORT OF CASES

CASE 1.—A woman aged 31, seen in consultation with Dr. Vincent J. Kelley on April 5, 1940, had a nasal furuncle of five days' duration and had received small doses of sulfanilamide at home for three days.

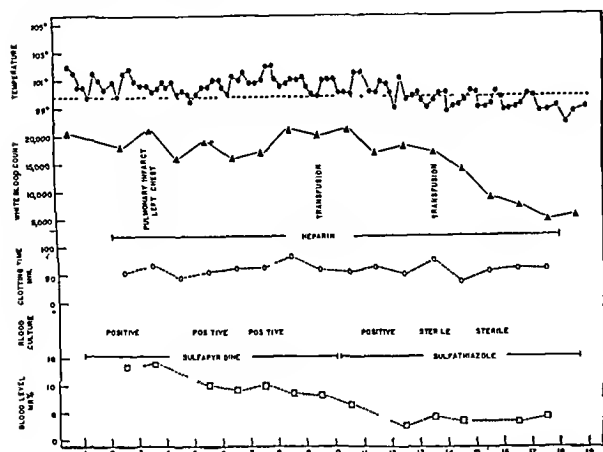


Fig. 5.—Course of temperature, white blood cell count, clotting time, blood culture (colonies per cubic centimeter) and treatment in case 2.

With the development of the signs and symptoms of cavernous involvement, Dr. Kelley was called and the patient was admitted to the Massachusetts Eye and Ear Infirmary.

On examination the patient was irrational, the temperature was 104.3 F. and there were exophthalmos of the right eye



Fig. 6 (case 2).—Patient's appearance four weeks after admission.

and edema of the bridge of the nose and both right eyelids. There was a discharging furuncle of the right naris, and the frontal veins were palpable.

In consultation, Dr. Lyons suggested the use of heparin in conjunction with chemotherapy, and the treatment was carried

out under his direction. The treatment and course of the disease may be rapidly reviewed by the following clinical notes:

First hospital day: Heparin and sulfapyridine started.

Fourth hospital day: Sulfathiazole substituted for sulfapyridine, as the blood culture showed staphylococci.

Eleventh hospital day: Pulmonary infarct.

Seventeenth hospital day: Heparin stopped after a total dose of 225,000 units.

Twentieth hospital day: Sulfathiazole stopped.

Thirty-fourth hospital day: Clinical signs of meningitis confirmed by lumbar puncture. Sulfapyridine started.

Forty-ninth hospital day: Meningitis still present. Sulfathiazole substituted for sulfapyridine.

Fifty-seventh hospital day: Afebrile and symptomatically improved.

Seventy-seventh hospital day: Discharged home; taking sulfathiazole.

At the time of discharge there was a partial paralysis of the third nerve and complete paralysis of the fourth nerve on the

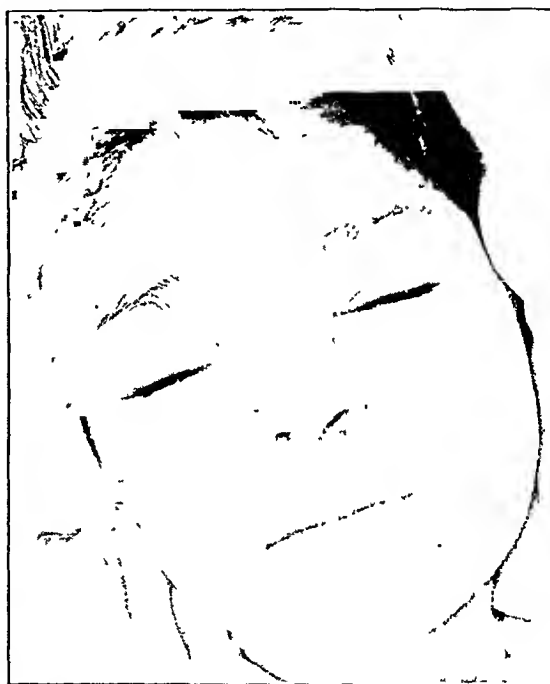


Fig. 7 (case 3).—Patient's appearance at the time of admission.

right. Chemotherapy was continued for a total period of four months, at the end of which time the spinal fluid protein had returned to normal.

On May 15, 1941 the patient was admitted to the psychiatric ward of the Massachusetts General Hospital suffering from a paranoid-like attack, the exact nature of which has not as yet been determined.

CASE 2.—A man aged 41, an engineer, entered the Massachusetts Eye and Ear Infirmary May 14, 1940 with the diagnosis of acute frontal sinusitis of one week's duration. Physical examination revealed a nasal furunculosis, and the diagnosis of acute sinusitis was not supported. On entry he was started on sulfapyridine therapy, but by the fourth hospital day exophthalmos of the right eye and edema of the eyelids and the bridge of the nose developed, with palpable frontal veins. Heparin was started on the fourth day and stopped on the nineteenth after a total dose of 580,000 units. During the course of the disease involvement of the sixth and the first division of the fifth cranial nerve developed. Sulfathiazole was substituted for sulfapyridine on the eleventh hospital day because blood cultures showed staphylococci.

Sulfathiazole was given for three months, at the end of which time the spinal fluid protein was normal. The patient still has a residual hyperesthesia of the left frontal region.

CASE 3.—A boy aged 9 years, referred to me on Jan. 7, 1941 by Dr. Charles W. Geddes with a diagnosis of cavernous sinus

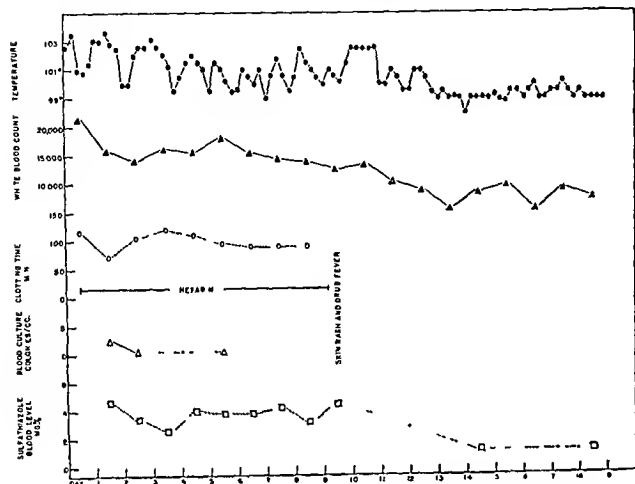


Fig. 8.—Course of temperature, white blood cell count, clotting time, blood cultures (colonies per cubic centimeter) and treatment in case 3.

thrombosis, was awakened from sleep three days before entry by a pain in his nose with some swelling of the face. His father noticed a small elevated area inside the left nostril. Under flaxseed poultices the swelling became worse and a furuncle in the nose broke and discharged.



Fig. 9 (case 3).—Patient's appearance four weeks after admission

On admission to the hospital there were exophthalmos and edema of the right eyelid and the bridge of the nose. The temperature was 102 F., and there was headache, with stiffness of the neck and a slight Babinski reflex on the right side.

The patient was drowsy, and blood cultures were positive for staphylococci. The patient was placed under the care of Dr. Lyons, and the hospital record can be summarized as follows:

First hospital day: Heparin 20,000 units given with sulfathiazole. Slight bleeding from nose.

Second hospital day: Sixth nerve paralysis.

Third hospital day: Involvement of first and second division of fifth nerve.

Ninth hospital day: Heparin stopped.

Tenth hospital day: Lumbar puncture done. Fluid crystal clear. Initial pressure 125.

Eighteenth hospital day: Patient up in chair.

Twenty-fourth hospital day: Sulfathiazole stopped.

Twenty-eighth hospital day: Temperature rose to 100.8 F. Pain on coughing; lumbar puncture, no increase in pressure—clear fluid, 1 cell.

Twenty-ninth hospital day: Sulfathiazole started again; temperature 102 F.

Thirty-fourth hospital day: Patient symptom free

Thirty-ninth hospital day: Patient discharged home—sulfathiazole ½ grain (0.03 Gm.) twice a day for six to eight weeks.

Total amount given: 130,000 units of heparin and 108 Gm. of sulfathiazole.

COMMENT

Three consecutive cases that fulfilled the diagnostic criteria of Eagleton of septic thrombophlebitis of the cavernous sinus of the anterior type have ended in recovery after treatment by the combination of chemotherapy and heparin.

Lyons¹⁰ states: "There is reason to believe that staphylococcal bacteremia usually arises from foci of septic thrombophlebitis in and around areas of supuration. Such a conception indicates that the attack upon any staphylococcal bacteremia should attempt to prevent the extension of septic thrombi as well as to destroy the bacteria."

It is contended not that heparin has any influence on a thrombus that has already formed but that, by increasing the fluidity of the blood, it may prevent the extension of that thrombus. Sterilization of the blood and the thrombus converts a septic process into an aseptic one, so that the combination of these drugs seems to be indicated.

CONCLUSIONS

1. Three consecutive patients with bacteremic staphylococcal thrombophlebitis of the cavernous sinus of the anterior type have been successfully treated by a combination of chemotherapy and heparin.

2. Sulfathiazole, given in doses sufficient to maintain a blood level of 5 mg. per hundred cubic centimeters and continued for a long period after administration of the heparin has been discontinued, has been the chemotherapeutic agent of choice. Experience with sulfadiazine indicates that this may prove to be the present drug of choice.

Fuel Values.—Nutrition laboratories have, as the result of many experiments, determined the average loss of fuel value in the body from these sources and, after deducting for such losses, give the following figures as the "physiological" fuel value of the three foodstuffs: 1 gram of pure carbohydrate, 4 calories; 1 gram of pure fat, 9 calories; 1 gram of pure protein, 4 calories. It is important to remember that the fuel value of fat is 2¼ times that of carbohydrate or protein, and hence foods rich in fat are especially high in fuel value.—Bogert, L. Jean, and Porter, Mame T.: *Dietetics Simplified*, New York, Macmillan Company, 1940.

CAISSON DISEASE

A STUDY BASED ON THREE HUNDRED CASES
OBSERVED AT THE QUEENS-MIDTOWN
TUNNEL PROJECT, 1938

I. J. THORNE, M.D.
NEW YORK

Caisson disease is an industrial hazard encountered in the building of bridges, tunnels and skyscrapers where compressed air is employed. In the past this malady has caused permanent disability and death in many instances. Certain principles of prophylaxis and new concepts of treatment are here presented aiming to reduce this industrial hazard.

THE CAUSATION OF CAISSON DISEASE

Caisson disease is caused by nitrogen gas, a physical agent. Emboli are produced by the formation of nitrogen gas bubbles in the tissues and blood stream which interfere with normal life processes.

A homogeneous mixture of gases in the atmosphere covers the earth to a height of approximately $4\frac{1}{2}$ miles. The atmospheric pressure is the weight of these gases on the earth's surface and is expressed in pounds per square inch. Although atmospheric pressure varies slightly, it is approximately 15 pounds per square inch.

The interchange of gases in the lungs and blood of a person who is in a compressed air atmosphere obeys the law of physics governing the solution of a gas in a liquid.¹ The quantity of nitrogen and oxygen dissolved by the blood varies directly as the pressure. The increased amount of oxygen absorbed is readily metabolized because it is an active gas chemically. This is not true of nitrogen, which is inert and is not utilized by the body.²

The increased amount of nitrogen dissolved in the blood is absorbed by the various tissues of the body according to their ability to hold nitrogen in solution. Fat and fatty tissues will dissolve much more nitrogen because nitrogen is five times more soluble in fat than in other tissues and body fluids.³ The amount of tissue saturation with nitrogen depends on the amount of air pressure and the length of time the body is exposed to this pressure.

When a person who has worked in compressed air is exposed immediately to normal atmospheric pressure, a phenomenon occurs similar to the sudden opening of a bottle of charged water. For example, bubbles of carbon dioxide will evolve from the charged water and will continue until equilibrium of partial pressures of carbon dioxide in the atmosphere and in the liquid is obtained. A similar phenomenon occurs in the blood and the body tissues under sudden release of pressure. The dissolved nitrogen gas evolves in the form of bubbles, producing blocking of the circulation and tearing of tissues with resultant symptoms of caisson disease. Bert's experiments add further evidence for the support of the nitrogen gas emboli theory as the cause of this disease.⁴

PATHOLOGY

Accumulation of evidence from postmortem examinations further supported the gas emboli theory as the cause of caisson disease.⁵ Fatal cases grouped themselves into a rapidly fatal group and a delayed fatal group. In the rapidly fatal group, death is caused by nitrogen emboli to the vital centers of the brain, the coronary vessels and the pulmonary arteries.

In the delayed death groups, death is caused by secondary complications following neurologic manifestations of the disease. After long standing paralysis of the lower extremities, bedsores, sepsis, anemia, pneumonia and exhaustion usually develop. The significant pathologic changes in the delayed death group are found in the spinal cord. The lumbar and thoracic regions of the cord show areas of necrosis and softening with degeneration and destruction of ascending and descending fibers.

SIGNS AND SYMPTOMS

Onset of Symptoms.—The onset of symptoms of the disease is relatively rapid. Of the 300 cases observed 60 per cent occurred during the first hour, 35 per cent during the second hour and 3 per cent during the third hour. Six cases occurred after twelve hours, amounting to 2 per cent of the total.

Presenting Symptoms.—Pain (the "bends"): The presenting symptom of the disease was pain. The cases observed formed groups clinically as follows: pain generalized, pain localized and pain with prostration and collapse. The pain of compressed air disease may vary in intensity, depending on the site of bubble formation and the amount of gas evolved in the tissues. The pain may thus be mild and transient or severe and excruciating. The occurrence of pain in various parts of the body according to incidence is as follows: legs 50 cases, unilateral or bilateral, occurring generally about the knees and ankles; arms 60 cases, unilateral and bilateral, involving several joints. It may radiate or follow the course of a peripheral nerve. Abdominal bends may be of such severity that shock, collapse and prostration occur, forming the next clinical group. Here pain in the abdomen is outstanding. It is often accompanied by signs of circulatory collapse because of the great amount of gas in the abdominal vessels mechanically impeding the circulation. The appearance of mottling and blotching with subcutaneous hemorrhages is further evidence denoting large amounts of free gas in the circulation. These are prodromal signs of coma and collapse, which should be carefully watched for. To the compressed air worker these symptoms are known as the "bends." The reason for this vernacular expression is obvious. The pain is of such severity as to make the afflicted one bend over to obtain relief. The pain is caused by the presence of bubbles of nitrogen gas in the tissues and the plugging of small arteries by nitrogen gas emboli. The lodging of nitrogen gas emboli in the gastrointestinal and mesenteric vessels is undoubtedly the cause of abdominal bends. Likewise, when bubbles of gas form in unyielding structures and tissues of the body such as ligaments, fascia, connective tissue, periosteum, synovial membranes, muscle spindles, joint capsules, skin and sweat glands, pain is the result. The greater the amount of gas, the greater will be the stretching of the unyielding tissues with the resultant increase in pain. Most compressed air workers suffer on decompression

1. Travers, M. W.: *The Experimental Study of Gases*, New York, Macmillan Company, 1901, chapter 9.

2. The quantity of a gas dissolved by a liquid increases directly as the pressure (Henry, 1803). The quantity of a gas dissolved by a liquid from a mixture of gases depends on the partial pressure of that particular gas (Dalton, 1807).²

3. Hill, Leonard: *Caisson Sickness and the Physiology of Work in Compressed Air*, London, E. Arnold, 1912; *An Address on Compressed Air Illness and Experimental Research*, Brit. M. J. 1: 345-353, 1912.

4. Bert, Paul: *Communication sur les effets de l'air comprimé*, Bull. Soc. méd. de l'Yonne (1872) 13 (pt. 2): 48-55, 1873.

5. Bert, Paul: *La pression barométrique; recherches de physiologie expérimentale*, Paris, G. Masson, 1878.

with mild fleeting pains in the various parts of the body which should be differentiated from true caisson disease.

Vertigo (the "staggers"): Next in the order of incidence are the cases in which symptoms resembling Ménière's syndrome are outstanding. The symptoms are dizziness or vertigo, staggering or loss of equilibrium, nausea or vomiting, abnormal ocular movements (nystagmus) and tinnitus, or ringing in the ears. Of the 30 cases observed at the Queens-Midtown Tunnel in 1938, there was vertigo in 6, vomiting and vertigo in 6, vertigo, vomiting, staggering and nystagmus in 10 and vertigo, nausea and tinnitus in 8. These symptoms are evidently caused by the evolution of nitrogen bubbles in the internal ear, labyrinth, cochlea and semicircular canals. To the compressed air worker this syndrome is known as the "staggers." A worker suffering from the "staggers" resembles a man who has indulged in alcoholic excess. Unless the worker's identifying badge is seen, the man is believed to be an alcoholic addict and is treated as such. This is one important reason why compressed air workers should wear their identifying badge where it can be readily seen and detected.

Air Hunger (the "chokes"): Dyspnea is characteristic of this group. These patients appear acutely ill and present a condition which is alarming. However, they yield readily to treatment, provided it is given immediately. Compressed air workers suffering from this symptom complex resemble an asthmatic patient. Physical examination of the chest reveals bilateral medium and fine moist and musical rales. These patients also resemble persons with heart disease suffering with sudden left ventricular failure and transitory pulmonary edema. This clinical picture is familiar to the compressed air worker and is known as the "chokes." Fifteen cases of the "chokes" were observed at the Queens-Midtown Tunnel. The symptoms are caused by varying amounts of nitrogen emboli in the pulmonary arteries.

Cutaneous Manifestations (the "itch"): The various cutaneous manifestations noted in the cases studied were pruritus (the "itch"), erythema and mottling and blotching. There were 20 cases presenting cutaneous manifestation of the disease: 6 presented only pruritus, 5 a combination of pruritus, erythema and blotching of the skin. Erythema and mottling of the skin were present in 6 cases. The intense itching is caused by nitrogen bubbles in the sweat glands of the skin. The erythema and purplish mottling of the skin denote stasis of blood in the cutaneous vessels as a result of nitrogen emboli in the skin capillaries. Cutaneous signs are usually early signs of compressed air illness. They signify possible ensuing symptoms of much greater severity. Therefore persons presenting cutaneous manifestations should be carefully observed for severer symptoms. Of 6 cases in which mottling and blotching of the skin were present, the "staggers" developed in 2 and the "chokes" in 4.

Neurologic Manifestations: This group of cases is important from the point of view of its disabling character and the possibility of permanent damage to the central nervous system. Patients with central nervous system symptoms who are not treated promptly are apt to develop permanent disability.

The nerve cells and tissues of the central nervous system are vulnerable to ischemia and pressure from nitrogen bubbles with consequent pressure necrosis.

Thus the reasons for permanent damage can readily be seen. Nitrogen bubble formation can occur in any part of the brain or spinal cord. Nitrogen emboli can form locally in the blood vessels or be carried to the central nervous system by the blood stream from other parts of the body. The central nervous system symptoms produced by compressed air disease can simulate those caused by any other disease or injury of the central nervous system. Complete unconsciousness and collapse to numbness and tingling of an extremity can be expected.⁶

Paralysis of the bladder and bowels is common in spinal cord cases. The majority of afflicted persons recover with treatment, while some remain with permanent weakness of the lower limbs. In some instances the patient dies after a lingering illness, death being caused by secondary complications such as cystitis, pyelonephritis, bedsores, pneumonia, exhaustion and anemia. Twenty-five cases of central nervous system symptoms occurred at the Queens-Midtown Tunnel: with brain involvement, hemiplegia 3 cases, monoplegia 2 cases, internal strabismus 2 cases, nystagmus 2 cases, diplopia 2 cases; with spinal cord involvement, sensory, numbness and tingling of both legs 5 cases, motor, paresis of both legs 4 cases, paralysis of both legs 2 cases, sensory and motor disturbance, numbness and tingling and paresis 3 cases. Urinary and bowel incontinence are present in all spinal cord cases in addition to the symptoms mentioned. Recovery was complete with treatment except in 1 case of paralysis of both legs. Urinary and bowel control were regained but weakness of both limbs remained.

DIAGNOSIS AND DIFFERENTIAL DIAGNOSIS

The diagnosis of caisson disease is not difficult. Although the symptoms are varied and depend on the parts of the body involved, there should be no doubt as to the diagnosis provided the patient is conscious and can give a history of exposure to compressed air during the preceding twelve hours. The identification badge that the compressed air worker wears conclusively confirms the diagnosis. It is conceivable that the identifying badge might not be worn and the worker might be in coma and unable to give a history. Furthermore, compressed air workers are susceptible to other injury or illness in addition to caisson disease. In such instances the diagnosis becomes more difficult and a careful differential is always necessary. A severe case of abdominal bends can simulate an acute surgical condition of the abdomen and conversely an acute surgical condition of the abdomen can simulate abdominal bends. True caisson disease must be differentiated from mild cases of myalgia, arthralgia and neuralgia. Aside from caisson disease, 135 cases of mild pain in the extremities were observed. Most of these cases responded to physical therapy and medication. The pains were located chiefly in the joints and extremities. They were described as vague aches and pains in the thighs, legs, arms, knees, ankles, elbows, wrists, shoulders and along the course of the peripheral nerves. The pains

6. Clark, E. A.: Effects of Increased Atmospheric Pressure upon the Human Body, M. Arch., St. Louis 5: 1-30 and 295-309, 1870-1871. Cazamian: Hématomyélie par décompression brusque chez un scaphandrier; paralysie spasmodique, Arch. de méd. nav. 98: 212-224, 1912. Genet, L.: Atrophie optique partielle et maladie des caissons, Bull. Soc. Ophth. de Paris, 1933, pp. 318-321. Callan, L. W.: Double Choked Dunks Associated with Compressed Air Disease (Caisson Disease), Arch. Ophth. 36: 509-512, 1907. Boinet: La maladie des scaphandriers, Bull. Acad. de méd., Paris 55: 756-764, 1906. Bassoe, Peter: Compressed Air Disease, J. Nerv. & Ment. Dis. 28: 368-369, 1911; The Late Manifestations of Compressed Air Disease, Tr. XV Internat. Cong. Hyg. & Demog. (1912) 3: 626-638, 1913.

were transitory and not severe enough to incapacitate the patient but were aggravated with change in temperature.

Physical examination revealed three clinical groups as follows: pains limited to muscles, myalgias; pains limited to joints, arthralgias; pains limited to the course of a peripheral nerve, neuralgias. Combinations of the three groups were also seen. It is believed that these cases are the result of the decided change in temperature on compression and decompression, the unusually damp atmosphere of the tunnel environment and the poor local tissue circulation resulting from fatigue following strenuous physical effort.

COMPLICATIONS

The complications of caisson disease are limited to the bones and joints. The symptoms of onset are insidious and are delayed from six months to a year or more following repeated attacks of the disease. A case of bone necrosis was reported in 1888 by Twynam.⁷ Cases of chronic arthritis were reported by Bornstein and Plate⁸ in 1911 and 1912 following repeated attacks of the disease. Bassoe⁹ in 1913 reported several cases of arthritis deformans. Christ¹⁰ in 1934 reported joint lesions. It is possible that nitrogen emboli in end arteries of nutrient vessels to bones might cause necrosis and degenerative changes in bone. Four cases of aseptic bone necrosis attributed to caisson disease were reported by Kahlstrom, Burton and Phemister¹¹ in 1939.

PROGNOSIS

The mortality of caisson disease has dropped to an exceedingly low figure at the present time because of the efficiency of the recompression treatment. Prior to the use of the medical lock the mortality rate was high. Blick¹² in 1909 reported 30 per cent mortality among pearl divers, 60 out of 200 patients dying before medical aid could be given. Jaminet¹³ in the St. Louis bridge construction reported 119 cases with permanent paralysis in 52 and death in 14, representing a 14 per cent mortality. Dominguez¹⁴ reported 106 cases of serious paralysis with 14.9 per cent mortality. During the building of the Brooklyn bridges the mortality was 3 per cent. During the work on the Hudson River tunnels the advantages of recompression were amply shown on the installation of a medical lock. After the medical lock was employed the mortality rate dropped from 25 per cent to 1 per cent. The mortality rate in building the Pennsylvania Railroad East River tunnels was 2 per cent. In 300 cases observed during the building of the Queens-Midtown Tunnel there was no mortality from this disease. In cases of sudden collapse and unconsciousness the prognosis is graver than in cases presenting only pain in the extremities. Those in which paralysis is present are difficult to cure, and advice as to the outcome should be guarded.

PROPHYLAXIS AND PREVENTION

In addition to nitrogen embolus formation, certain secondary conditions predispose an individual toward caisson disease. They are age, systemic disease, obesity, alcoholism and fatigue.

It is the consensus that the ideal age for compressed air workers is between 20 and 40 years, since during these years the cardiovascular system is at its peak of greatest efficiency and best able to withstand the hardship of increased air pressure. Diseases of the heart, lungs and kidneys and peripheral vascular diseases are grounds for rejection. These conditions should be carefully ruled out during the first examination. Obese men are bad risks because of the great solubility of nitrogen in fat. Men who are known to be habitual drinkers are poor risks because of the effect of alcohol on the circulation and should be rejected.

A man who is acutely ill should not be admitted to compressed air until he has recuperated. Acute infection of the upper respiratory passages should temporarily disqualify a man for employment, because the infection usually involves the eustachian tubes and ostia of the sinuses, causing adhesions of the walls and consequent closure. When one is entering the compression chamber the ear drum is stretched, causing severe pain. This is known as "ear block." Infection of the mucous membrane of the ostia of the sinuses causes acute edema. Valvelike action occurs, allowing air to enter the sinus; but its escape is prevented. Air under pressure becomes trapped in the sinus, causing severe pain. This is known as "sinus block." Acute infection of the sinus may follow from organisms driven into the sinus by the compressed air, requiring surgical intervention. Failure of the eustachian tubes to open to equalize the pressure on either side of the tympanic membrane will result in rupture of the tympanum with consequent infection of the middle ear.¹⁵ Fatigue predisposes to emboli and the "bends" because of its effect on the circulation, causing slowing of the elimination of nitrogen gas.

There is no immunity to caisson disease. Consequently the most important step in the prophylaxis is the physical examination with special emphasis on the heart, lungs, circulatory system, circulatory efficiency and cardiac reserve. The importance of age, weight and habits should not be overlooked.

Approximately 20 per cent of the men examined at the East River tunnels were rejected. Men who show symptoms of caisson disease after one or two trial test shifts would be rejected. Many of the men suffer from repeated mild attacks of pain and itching of the skin, but there is no need for rejection on such mild symptoms.

The ultimate prevention of the disease depends on the proper elimination of nitrogen from the tissues during decompression. There is only one route by which the nitrogen in the body tissues and blood can be eliminated, and that is through the lungs by the circulation. Any condition affecting the efficiency of the circulation is likely to affect the efficiency of the elimination of the nitrogen gas from the tissues. During the decompression stage the value of exercise in stimulating the circulation cannot be overemphasized. The extreme importance of slow decompression should always be borne in mind. The working time under

7. Twynam, G. E.: A Case of Caisson Disease, *Brit. M. J.* 1:190, 1888.

8. Bornstein and Plate: Ueber chronische Gelenkveränderungen entstanden durch Pressluftkrankung, *Fortschr. a. d. Geb. d. Röntgenstrahlen* 18:197-206, 1911-1912.

9. Bassoe, Peter: Compressed Air Illness, *Illinois M. J.* 17:462-469, 1910.

10. Christ, A.: Ueber Caissonkrankheit mit besonderer Berücksichtigung einer typischer Erkrankung des Hüftgelenkes, *München. med. Wchnschr.* 51:843, 1934.

11. Kahlstrom, S. C.; Burton, C. C., and Phemister, D. B.: Aseptic Necrosis of Bone, *Surg., Gynec. & Obst.* 68:129-146 (Feb.) 1939.

12. Blick, G.: Notes on Diver's Paralysis, *Brit. M. J.* 2:1796-1798, 1909.

13. Jaminet, A.: Physical Effects of Compressed Air, *St. Louis, R. & T. A. Ennis*, 1878.

14. Dominguez, A. G.: Caisson Disease o parálisis de los brazos, *Rev. de med. y cir. de la Habana* 17:359-368, 1912.

15. Crosson, J. W.; Jones, R. R., and Sayers, R. R.: Helium-Oxygen Mixtures for Alleviation of Tubal and Sinus Block in Compressed Air Workers, *Pub. Health Rep.* 55:1487-1496, 1940. Lovelace, W. R., II; Mayo, C. W., and Boothby, W. M.: Aero-Otitis Media, *Proc. Staff Meet. Mayo Clin.* 14:9-96, 1939.

pressure should always be held within safe limits with adequate rest periods between shifts. This is important, because the amount of nitrogen absorbed depends to a large extent on this time factor. The inhalation of oxygen and oxygen-helium mixtures during the decompression period to hasten the nitrogen release from the body is a valuable prophylactic measure. Sudden changes in temperature should be avoided. Therefore the temperature of all air locks should be controlled by suitable heating apparatus to keep the temperature as constant as possible.

TREATMENT

The essential treatment of caisson disease is the return of the patient to the compressed air. In previous years, men who were seized with an attack voluntarily returned to the compression chamber for the relief of their symptoms. Today this treatment is given in a compression chamber known as a "medical air lock."¹⁶

Only those who have witnessed the treatment of a case of compressed air illness can realize the efficacy of recompression. Recompression should be started as soon after the onset of symptoms as possible, because the sooner the bubbles of nitrogen are redissolved the sooner will the circulation be established and pain relieved. The possibility of permanent damage to vital structures such as the brain and spinal cord will be materially reduced by immediate recompression. It has been noted that if treatment is delayed following the onset of symptoms a higher pressure is necessary to give relief. Long delay in recompression may result in permanent injury to the cord because of anemia as a result of the circulation being blocked by nitrogen emboli. It is true that recovery will occur in certain mild cases without recompression, but there are no criteria by which we can determine which cases suddenly become serious. It is most advisable therefore to treat all definitely diagnosed cases of the disease by recompression immediately.

Of 300 patients treated at the Queens-Midtown Tunnel airlock, 85 per cent were completely relieved, 12 per cent were partially relieved and 3 per cent had no relief. Experience has established that symptoms in most cases are relieved by recompression to a pressure equal to that to which the worker was exposed. Occasionally it is necessary to go 5, 10 or 15 pounds higher before complete relief is obtained.¹⁷

The consensus favors waiting twenty to thirty minutes before starting the decompression process. Observations have proved that this waiting period has given the best result. In many instances symptoms recurred if decompression was started immediately with no waiting period, requiring another recompression. To avoid repeated recompressions, it was found advisable to introduce this waiting period before starting the decompression process. Despite the waiting period, however, symptoms are apt to recur requiring one or more additional recompressions.

It was noted that if the men were made to exercise the affected limb during the decompression process it aided materially in obtaining a permanent relief. The inhalation of pure oxygen and oxygen-helium mixtures during decompression has given encouraging results

in many instances. These gases hasten the elimination of dissolved nitrogen from the blood and hence decrease the tendency toward the disease.¹⁸ The importance of stimulating drugs as adjuncts in treatment should not be minimized. Strychnine, epinephrine and caffeine are valuable circulatory stimulants and one should not hesitate to use these drugs in cases of circulatory collapse. In cases of respiratory failure, artificial methods should be instituted. Physical therapy and general nursing care should be given whenever necessary.

SUMMARY

1. Three hundred cases of caisson disease occurred without mortality during the building of the New York Queens Midtown Tunnel in 1938.

2. Serious disability in these cases was also practically nil. This remarkable result may be attributed to:

The selection of workers between the ages of 20 and 40 years, free from acute or chronic disease and with freedom from pulmonary, cardiovascular, renal, peripheral vascular or gastrointestinal diseases and obesity.

Prompt recompression of all subjects exhibiting the slightest symptoms of caisson disease, thereby minimizing neurologic phases of the disease, which ordinarily when neglected prove most disabling or fatal.

The prophylactic inhalation of oxygen and oxygen-helium mixtures in the decompression stage, thus hastening nitrogen release.

The rigid regulation of the duration of the working shifts and rest period between shifts according to prescribed pressure-time codes.

20 West Seventy-Second Street.

RADIATION PROTECTION IN FORTY-FIVE HOSPITALS

LEONARD A. SCHEELE, M.D.

AND

DEAN B. COWIE

Passed Assistant Surgeon and Research Fellow, respectively, National Cancer Institute, National Institute of Health, United States Public Health Service

BETHESDA, MD.

The increasing use of radiation in medicine, industry and research demands increased knowledge of radiation effects and protection methods. The authors visited forty-five hospitals of all types, ranging in size from forty-four to over three thousand beds (thirty-two have more than two hundred beds) and studied storage and handling of radium, calibration and shielding of roentgen therapy equipment and techniques of use and shielding of roentgenographic and fluoroscopic units.

Ionization chambers ranging in sensitivity from 0.25 roentgen to 100 roentgens full scale were used in making measurements. Estimates of average exposures were calculated from ionization measurements made during typical operations such as preparation of radium applicators and roentgenoscopic and roentgenographic procedures, multiplied by the average daily time spent performing such activities. Adequacy of equipment and practices were judged in most instances on the basis of recommendations for protection which have been pub-

16. The first recompression chamber in the United States was installed during the building of the New York Hudson tunnels under the North River in 1894. This was known as a "medical lock" and because of its efficiency it was made essential to the equipment of all compressed air work.

17. Keays, F. L.: Compressed Air Illness with a Report of 3,690 Cases, Pub. Cornell Univ. M. Coll., Dept. Med. 2: 1-55, 1909. Shilling, C. W.: Compressed Air Illness, U. S. Nav. M. Bull. 36: 9 and 235, 1938.

18. Behnke, A. R. and Yarbrough, O. D.: Physiologic Studies of Helium: Report on Use of Helium Oxygen Mixtures for Diving, April 1939. Behnke, A. R. and Shaw, L. A.: The Use of Oxygen in the Treatment of Compressed Air Illness, U. S. Nav. M. Bull. 35: 61-73, 1937.

Read before the Section on Radiology at the Thirty-Second Annual Session of the American Medical Association, Cleveland, June 6, 1941.

lished by various writers¹ and those in the National Bureau of Standards handbooks on roentgen ray² and radium protection.³ The authors used the 0.1 roentgen dose which is published in these handbooks as the safe daily tolerance dose.

RADIUM

Relationships between amounts of radium, distance from the nearest person to the radium and time spent at such distance were studied, and it was found that lead equivalents of storage blocks were such that overexposure occurred in sixteen of the forty-five hospitals and was borderline in thirteen. Storage in safes in administration offices was a frequent cause of excessive exposure of nontechnical personnel. Radium units, especially those in assembled applicators, were found outside the storage blocks in more than one fourth of the hospitals.

Fourteen institutions had no L blocks, and ten had blocks less than 2 inches (5 cm.) in thickness. Four of these were less than $\frac{1}{4}$ inch (0.64 cm.) thick. Radium was often assembled in more than one place in the hospital, yet only one L block and set of assembly instruments had been provided.

Instruments for assembly were excellent in twenty-four institutions. In the remainder, either no special instruments had been provided or those at hand were inadequate. Frequent use of fingers was noted during manipulation. Lack of education and supervision of subordinate personnel often contributed to overexposure. Table 1 shows the exposures found during the assembly of single applicators for intra-uterine use.

Hands, paper boxes, glass jars and inadequate lead boxes were used as carriers in the majority of the institutions.

ROENTGEN DIAGNOSIS

Roentgen departments had excellent lead-lined control rooms in twenty-three of the forty-five hospitals. Thirteen had no protection for the operator except that around the tube, and this usually was incomplete or insufficient. The remainder had only partial lead protection.

Many technicians held the majority of infants and patients speaking only a foreign language who came for roentgenograms, and one received exposures on the hands as high as 35 roentgens while holding a single patient. Other daily exposures ranging from 1 to 5 roentgens were observed.

Open lead glass bowls were found to be in frequent use. The majority of technicians working with them did not have the benefit of adequate shielding at the control panel and received daily doses in excess of 0.1 roentgen. Four instances were noted in which the unshielded operator at the control panel was in the direct beam of the tube, and one of these received 0.2 roentgen a day doing only sinus series.

In several instances the holding of films or patients during portable roentgenography resulted in overexposure. In one case the hands received 0.42 roentgen and the body 0.14 roentgen during the making of two exposures.

The greatest repeated overexposures were found during fluoroscopy. The worker depends on inherent protection in the equipment and other protective devices such as lead-rubber aprons and gloves to shield him from overexposure, because it is impossible to do fluoroscopy at a distance in a shielded control room.

The lead glass in the fluoroscopic screen provided adequate shielding in all institutions; however, it was found that the shutters of thirty of the units did not restrict the direct beam to the protected screen area. There was considerable overlapping when the shutters were wide open with the screen 40 cm. above the table top. Since average intensities at the surface of the table were approximately 13 roentgens a minute without a patient at 75 kilovolts and 5 milliamperes, it was possible for the examiner to receive large doses on his hands if he worked with the shutter wide open and no protective gloves. A careful check revealed that most radiologists were unaware of the fact that often they opened widely one or the other pair of leaves of the shutter at intervals during each examination, especially during examinations of chests and bones. Hand-held portable screens were found to be great offenders in permitting overexposure.

TABLE 1.—Body and Finger Exposures in Selected Cases During Assembly of a Single Radium Tandem for Intra-Uterine Insertion

Case	Applicator Material	Radium		L Block Thickness, In.	For-ceps Length, In.	Elapsed Time, Min.	Exposure in Roentgens	
		In Applicator, Mg.	Other on Table, Mg.				Body	Fingers
A	Rubber	85	275*	2	10	31	0.02	25.0
B	Silver	90	10	$\frac{3}{4}$	8	12	0.04	0.4
C	Rubber	75	None	None	10	10	0.05	1.5
D	Rubber	75	125*	None	4	20	0.05	30.0

* In open lead box.

Average exposures to the hands of the examiner during fluoroscopy were found to be such that doses could not be held under 0.1 roentgen a day unless gloves with 0.5 mm. of lead equivalent were worn as a routine. In spite of this, one fourth of the radiologic departments possessed no lead rubber gloves, or such gloves were never used. The practice of wearing pigskin or canvas gloves, offering inadequate protection during typical fluoroscopic examinations, was found to be frequent. In the institutions in which gloves were used, many of the gloves were found to be old and to have missing lead protection on the sides of the fingers or other local defects, thus failing to provide efficient protection.

Fluoroscopic rooms were checked at various points for stray radiation with a hand screen, and it was found that there was sufficient scattering in twenty-seven such rooms to permit resolution of the bones of the fingers 10 feet from the table with the units operating at 75 kilovolts and 5 milliamperes. Aprons were checked for effectiveness in reducing the exposure hazard in these hospitals, and extreme variations were found in the protective value of the aprons owing to sizable differences in their lead content. Aprons with 0.5 mm. lead equivalents placed on the table top in the direct beam reduce the intensity at the screen to such a level that no fluorescence can be seen on it. Many aprons were found to have lead equivalents well under 0.5 mm., and in one case eight thicknesses of apron in the direct beam permitted sufficient fluorescence to occur to enable one to examine bones of the hand. Aprons were worn by technicians in the fluoroscopic examination rooms of

1. Taylor, L. S.: X-Ray Protection, J. A. M. A. **116**: 136-140 (Jan. 11) 1941. Pack, G. T., and Livingston, E. M.: Treatment of Cancer and Allied Diseases, New York, Paul B. Hoeber, Inc., 1940, vol. 1, pp. 274-300. Failla, Gioacchino: Radium Protection, Radiology **19**: 13-21 (July) 1932. Kaye, G. W. C.; Bell, G. E., and Binks, W.: The Protection of Radium Workers from Gamma Radiation, Brit. J. Radiol. **S**: 6-26 (Jan.) 1935. Quimby, Edith: Radium Protection, J. Appl. Physics **10**: 598-608, 1939.

2. X-Ray Protection: Safety Recommendations, Prepared by Advisory Committee on X-Ray and Radium Protection, Handbook HB20, United States Department of Commerce Bureau of Standards, 1936.

3. Radium Protection: Handbook HB23, United States Department of Commerce, Bureau of Standards, 1938.

only seven hospitals, although scattering was of such intensity in many of the rooms as to permit them to receive more than 0.1 roentgen a day. It is noteworthy that the age of the equipment was not found to be a factor in the levels of overexposure discovered.

ROENTGEN THERAPY

Thirty-nine of the forty-five hospitals visited had equipment for high voltage roentgen therapy. Only four in this group had inadequate shielding, although the technic used in a few of the others caused occasional overexposure. Shifting of patients with the tube in operation and failure to close the lead protective door were the principal faulty technics noted.

Calibrations were checked in thirty-seven of the institutions. Table 2 shows the errors found with reference to frequency of calibration. One fourth of the calibrations in use had errors of more than 10 per cent. Most of the errors were such that fewer roentgens were delivered in a given period of time than the calibration in use indicated. Of the twenty hospitals calibrating oftener than once a year, only three had

TABLE 2.—Distribution of Calibration Differences Over 10 per Cent with Reference to Frequency of Calibration

Calibration Frequency	Hospitals	Hospitals with Differences Greater Than 10 per Cent	Calibration Differences, per Cent
2 or more per month.....	1	0	0
1 per month.....	9	3	10, 12, 15
2 per year.....	10	0	0
1 per year.....	11	4	15, 19, 46, 50
1 per 2 years or more.....	6	2	15, 19

TABLE 3.—Calibration Differences of More Than 10 per Cent, by Profession of Worker Calibrating

Profession of Calibrator	Institutions in Which Calibrators Worked, Number	Errors Over 10 per Cent, Number
Registered physicists.....	11	0
Radiologists and staff physicists *.....	16	1
Technicians.....	3	2
Others.....	7	6

* Includes residents in radiology.

differences, and none of these exceeded 15 per cent. Six of the remaining seventeen institutions in which calibrations were checked once a year or less often showed errors, the greatest of which was 50 per cent.

Table 3 shows the errors with reference to the person calibrating. In the twenty-seven hospitals in which registered physicists, radiologists or staff physicists made the measurements, only one of the calibrations in use was found to be in error. Eight of the ten institutions in which technicians and others calibrated had errors of more than 10 per cent.

The principal reasons for the differences found were as follows: (1) Calibrations were too infrequent, (2) persons calibrating were not thoroughly familiar with the proper methods of doing such work, (3) local calibration equipment was not standardized and (4) stop watches, timers and integrating devices gave erroneous readings. The first two were the principal causes of variations.

INJURY

Extensive study of injuries of workers was not feasible in this survey owing to time limitations; however, a few observations were made.

Blood counts were routine procedures in only nine institutions. Several instances in which total leukocyte

counts fell below 5,000 and total red counts and hemoglobin content were reduced were noted, but the methods of performing counts in most cases were not objective enough to permit any real significance to be attached to them.

Cutaneous effects varying from atrophy to the formation of epithelioma were noted in twelve radiologists (20 per cent of the radiologists seen) and five technicians. The total population observed was approximately two hundred and twenty-five, of whom the majority were technicians whose employment had been relatively brief. Those with injuries had had exposures to radiation varying from ten months to twenty-five years, and the majority had been exposed more than fourteen years.

No observations on genetic injuries could be made from data available during this survey.

SUMMARY

A study of protection in forty-five hospitals has shown that there are so many points in mechanics and practices which must be carefully controlled if overexposure is to be prevented that no hospital was able to eliminate all possibility of excessive exposure. In general, hospitals tended to have good protection in most particulars or inadequate protection in most particulars.

It was found that careful compliance with the recommendations in the handbooks on radium and roentgen ray protection enabled even the busiest workers to receive daily doses in the order of 0.02 roentgen or less. However, equipment and practices, as they were found, caused a large number of the workers to receive more exposure than the recommended 0.1 roentgen a day.

In the hospitals visited, too little attention was paid to adequate education and supervision of technical workers handling radium and x-ray equipment. Many workers, other than radiologists, who used x-ray equipment and radium had little knowledge of radiation physics.

The need for adequate lead protection in storage and L blocks for radium and careful choice of site for such storage and assembly were often ignored.

Obsolete equipment and failure to provide or use lead protective barriers during roentgenography permitted many cases of overexposure to occur. Excessive exposure was found to result from the commonly observed practice of holding patients during roentgenography.

Both radiologists and technicians received considerably more radiation during fluoroscopy than they were aware of. These exposures were the most excessive noted in the survey.

It was found that less inherent protection had been built into most equipment and protective devices than radiologists generally realized. Few persons had made adequate measurements to reveal the adequacy of protection in their departments.

In one fourth of the thirty-seven hospitals in which calibrations were checked, errors exceeded 10 per cent. Radiologists and physicists were found to be the most competent groups to do calibrations. Calibrations were too frequent in many hospitals to permit accuracy in the calculation of doses given to patients.

The impression was gained by us that too little attention has been paid to protection with reference to both equipment and practices in most of the hospitals visited. The casual finding of twelve injuries among sixty

radiologists is evidence of the need for further study of tolerance doses, the problems of shielding of equipment, and operating technics.

ABSTRACT OF DISCUSSION

EDITH QUIMBY, M.A., New York: Many like to think that radiologists are so conscious of the hazards of their profession that they all make sure of adequate protection. This paper should open our eyes. All the failures reported by Drs. Scheele and Covie have been in departments under the supervision of qualified radiologists. Some of the most flagrant examples of carelessness were made by technicians whose chiefs disclaimed knowledge of what had been occurring. This is a serious indictment—but how many of you know all of your technicians' short cuts? Do you know whether your radiographic tube can ever point at an open door? Do you know how many times your technicians are endangered by holding patients whose cooperation they cannot secure? How many of you have made sure that your lead rubber gloves and aprons have been tested, and how many of you wear them when they have been tested? How many of you know the equivalent of protection in your fluoroscopes? And how many of you know how much scattered radiation they are getting, even though you yourself may be safe? How many of you know what procedure your radium technicians go through in making up applicators, whether they fumble around with the forceps and then pick up the tubes with their fingers and jam them into place? How many of you know how long the radium applicators lie around in occupied rooms before or after they are used? There should be no need for reviewing the protection requirements; they have been published in the radiologic journals and in the bulletins of the Bureau of Standards. But it is not always easy to see just how a particular installation or procedure fits into standard recommendations. For this reason your radiologic organizations, through their standardization committees, maintain a list of registered radiologic physicists. These men and women have all passed a comprehensive examination covering calibration and protection methods, and they are available for consultation on these matters. They will go over existing installations, make complete surveys and give you their recommendations or they will go over plans and offer advice before a new installation is made. In the first case they may pick up difficulties before you get into trouble. In the second they can insure satisfactory protection, and at the same time they may be able to save you money by knowing where maximum shielding is necessary and where something less is entirely satisfactory.

DR. JOHN T. MURPHY, Toledo, Ohio: May I ask Dr. Scheele if the newly designed fluoroscopic unit for the Army has been checked for the effect of radiation on the operator? It looks to me to be the most flagrant violation of the rules of fluoroscopy that I have ever seen.

DR. LEONARD A. SCHEELE, Bethesda, Md.: In answer to Dr. Murphy's question, I do not know whether or not this equipment has been tested for scattering. While we spend a great deal of time talking about protection, many people do little to test exposure actually. Some manufacturers, for example, seem to have made few or no tests of scattering from their equipment under actual or simulated working conditions. They put a little lead here and there and assume that they have provided adequate protection. They often arrange shutters which, when they leave the factory, limit the direct beam to the screen but after a few months no longer limit it on all sides.

DR. MURPHY: Isn't it a fact that, since they have been putting the Bucky diaphragm under the fluoroscopic table, it is impossible to bring a cone into place to shield the lateral and indirect radiation from the fluoroscope?

DR. SCHEELE: It was found that that was the source of much of the secondary radiation and overexposure during roentgenoscopy. We hope that a mechanical means such as a sliding extension on the cone can be devised so that when the Bucky diaphragm is slid into place the extension will be lowered automatically and springs will push it up into place to fill the gap when the plate holder is moved aside.

FALSE POSITIVE SEROLOGIC REACTIONS FOR SYPHILIS

DUE TO SMALLPOX VACCINATIONS (VACCINIA)

FRANCIS W. LYNCH, M.D.

ST. PAUL

RUTH E. BOYNTON, M.D.

AND

ANNE C. KIMBALL, Ph.D.

MINNEAPOLIS

In the past few years there has been a renewal of interest in false positive serologic reactions. Partly because of the increased number of tests performed as a routine on apparently nonsyphilitic persons, there is a better realization of the number of causes of false positive reactions. There are three main groups of such reactions: (1) those due to technical error, a relatively infrequent occurrence; (2) those reactions encountered in persistently false positive human serums resulting from the presence of a reagin-like component which has been demonstrated in various animal serums;¹ (3) those positive serologic reactions which are found in patients with organic disease other than syphilis; they occur regularly in yaws, fairly constantly in leprosy and malaria and less frequently in many other diseases.² Further information and conclusive identification of those diseases causing positive reactions are particularly of clinical interest when the reactions are strongly positive and thus capable of leading to incorrect diagnosis.

With most diseases in which false positive reactions have been frequently reported there is little evidence as to their relative incidence or duration. In some cases the reactions remain positive for only a limited period, as in malaria and infectious mononucleosis. Early reports on serologic studies in these two diseases indicated that only 10 to 20 per cent of the patients gave positive reactions; later studies with frequently repeated tests show that a positive reaction may be expected in almost every malarial patient and in a high proportion of patients with infectious mononucleosis if the specimen is collected at the proper time.

Many acute infectious diseases are known to cause false positive serologic reactions, but vaccinia has not been generally recognized as a cause of such reactions until Moore and his co-workers recently mentioned this possibility, stating that it has been encountered in their clinic.³ There should be particular concern as to the effect of vaccination because it is an immunologic procedure of such general application. Certainly the medical profession should have a peculiar responsibility to see that no patient is wrongly regarded as syphilitic when the false positive serologic reaction may be the result of vaccination.

In 1940 Barnard⁴ reported a case in which positive reactions were observed for more than a month in the

Read before the Section on Dermatology and Syphilology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 4, 1941.

From the Division of Dermatology and the Students' Health Service, University of Minnesota, and the Minnesota Department of Health, Division of Preventable Diseases.

1. Giordano, A. S., and Carlson, B.: Occurrence of a Nonspecific Substance in Guinea Pig Serum Fixed by Antigen in the Wassermann Test, *Am. J. Clin. Path.* 9: 130, 1939. Kahn.⁵

2. Biologic False Positive Serologic Tests for Syphilis, editorial, *Ann. Int. Med.* 15: 171, 1940. Moore.³ Thomas and Garrity.⁷

3. Moore, J. E.; Eagle, H., and Mohr, C. F.: Biologic False Positive Serologic Tests for Syphilis. III. A Suggested Method of Approach to Their Clinical Study, *J. A. M. A.* 115: 1602, 1940.

4. Barnard, R. D.: False Positive Blood Serological Tests for Syphilis Following Vaccination for Variola, *Illinois M. J.* 77: 78 (Jan.) 1940.

blood of a recently vaccinated person (table 1). There is some doubt that vaccinia caused the positive reactions in this case because the "primary take" did not appear until nearly three weeks after vaccination, but the evidence submitted is reasonably conclusive that vaccinia was the causative factor.

Later in 1940, Bay and Sankstone⁵ decided that the facilities at the Chicago State Hospital made it an "easy matter to make a statistical examination" of this prob-

TABLE 1.—False Positive Reactions in Vaccinia (Barnard),
Inoculated March 11, 1938 (Delayed Vaccinia)

	4/9	4/15	5/12	5/18	6/1
Kahn	3+	4+	4+	4+	—
Cholesterol antigen	—	...	4+	2+	—
Lipoid antigen	—	—	—	—	—

lem. They studied 100 persons on whose blood Kahn tests were performed on specimens collected at intervals from twenty-nine to seventy-six days from the onset of the vaccination take, and "in no instance was a positive reaction obtained." They concluded that the incidence of such positive reactions must be less than 1 per cent.

Thomas and Garrity⁶ also investigated this problem with a review of the records of 10,000 naval recruits from whom the blood specimens were collected an average of twelve days after vaccination. They found that twenty-three of the twenty-six false positive Kahn reactions were encountered in the group having primary or accelerated vaccination reactions (52 per cent of the total), rather than in the group having immune reactions (48 per cent). There was no appreciable difference between the group showing primary reactions as compared with those showing accelerated reactions. Since no preliminary control studies were performed and only one type of test was used, it was impossible to estimate the percentage incidence of reactions due to vaccinia. In a second report on another group of 10,000 recruits whose blood specimens were collected only before vaccination, six (0.06 per cent) false positive Kahn reactions were recorded as compared with twenty-six (0.26 per cent) in the group vaccinated before the collection of the blood.⁷ Thomas and Garrity describe 1 person whose blood previous to vaccination showed a negative and who gave strong Kahn, Kline and Wassermann reactions three weeks after vaccina-

TABLE 2.—Studies on Blood of Student with Severe
Primary Vaccinia

		1/27	2/10	2/17	5/24
Laboratory A	Kolmer	3+	+	—	—
	Kline	4+	3+	±	—
Laboratory B	Kolmer		Positive	—	—
	Kahn		Positive	Positive	—

tion. In this case the Kahn verification test was of the syphilitic type. Reactions became negative within four weeks.

Barnard also mentioned in his report that Giordano has discussed a similar case. Though Giordano's case

has not been formally recorded, he states that in 1935 he observed a patient whose blood reacted positively to a complement fixation and a precipitation test during the period of the local lesion of vaccinia. In 1941 he observed another person who had a false positive reaction associated with vaccinia. In each case the strongly positive reaction gradually changed to negative within forty-five days.⁸

Several years ago the following incident stimulated our interest in this subject. Dr. Mattie J. Bullard of Gary, Ind., then on the staff of the University of Minnesota Students' Health Service, received a report of Kolmer 3+ and Kline 4+ on blood taken from a student who had severe primary vaccinia. The results of subsequent studies are shown in table 2.

Because of the conflicting evidence as to the role of vaccinia in causing false positive reactions, the following study of serologic reactions of a group of youths not previously vaccinated was undertaken. In an effort to exclude the possibility of syphilis or a false positive reaction of undetermined origin, the blood was first tested at the time of inoculation. The subjects were requested to return for a test two weeks later, but in many cases the interval was longer. Those whose serums then gave positive or doubtful reactions were asked to submit to periodic testing until the report

TABLE 3.—Serologic Reactions in 7,601 Examinations

	Entrance Examina- tion	Periodic Examina- tion	Incidence of Syphilis	False Positive or Doubtful
Men	2,692	1,875	12	35
Women	1,732	1,302	1	26
Total	4,424	3,177	13 (0.17%)	61 (0.8%)

might become negative. In addition to those who showed a doubtful or positive reaction to the diagnostic tests, the studies were repeated on all who showed any reaction to the Kline exclusion test. The time interval of two weeks after inoculation was chosen because it was thought that the patients of Bay and Sankstone may have been studied so long after vaccination that any false positive reactions might already have returned to negative.

All specimens were tested by the Kolmer Wassermann, Kline diagnostic, Hinton and Mazzini tests. Most of the specimens taken after vaccination were tested also by the Eagle and the standard Kahn test.

In any serologic study the reliability of the laboratory performing the tests must be given first consideration. In this study the facilities of the Minnesota Department of Health were used. Serologic tests as performed in these laboratories have been evaluated in the U. S. Public Health Service survey and have been compared with other laboratories within the state. Recently, in a group of patients with early syphilis, the results of standard Kahn tests in these laboratories have been compared with results reported by Dr. Kahn's laboratory on duplicate specimens. The sensitivity and specificity of the tests as performed are shown to be satisfactory.

The physical status of the persons tested also deserves consideration. They were students entering the university who submitted to a routine physical examination and demonstrated no evidence of syphilis. The incidence

5. Bay, A. P., and Sankstone, M. I.: Effects of Vaccination on Wassermann Tests, Correspondence, J. A. M. A. 115: 475, 1940.

6. Thomas, G. E., and Garrity, R. W.: Routine Kahn Blood Reactions: Report on 10,000 Tests Made on Naval Recruits, U. S. Naval Med. Bull. 39: 72 (Jan.) 1941.

7. Thomas, G. E., and Garrity, R. W.: Routine Kahn Blood Reactions: Supplementary Report on 20,000 Tests Made on Naval Recruits, With Observations on the Relationship of Cowpox Vaccination to the False Positive, U. S. Naval Med. Bull. 39: 272 (April) 1941.

8. Giordano, A. S.: Personal communication to the authors.

of syphilis and of apparently false doubtful or positive reactions has been determined among students entering the university in previous years. Table 3 indicates the status of the group tested in 1939, one year before the present study.

RESULTS OF SURVEY

Among 267 persons in whom primary vaccinia later developed, all specimens taken at the time of inoculation

TABLE 4—Forty-Three False Reactors Encountered in 263 Cases of Vaccinia

	±	+	++	+++	++++	Total
Kline	6	7	0	0	1	14
Kolmer	0	1	1	0	5	7
Hinton	13	6	11	0	1	31
Mazzini	11	7	4	4	2	28
Total	30	21	16	4	9	80
Number of persons in whom this was the highest reaction	14	12	9	2	6	43 (16%)

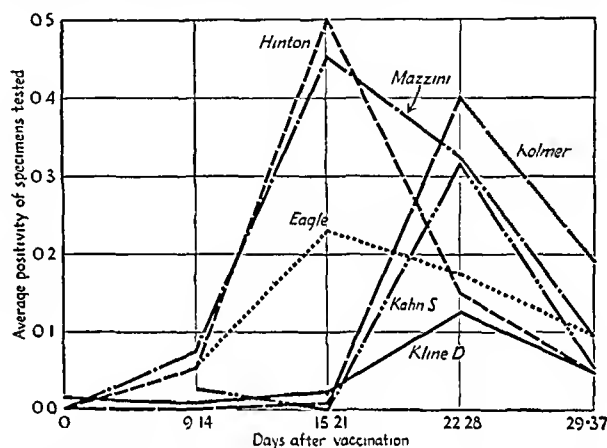
were reported negative to the Kolmer Wassermann, Hinton and Mazzini tests. One gave a positive reaction (2+) and 3 gave doubtful reactions to the Kline diagnostic test. These 4 reactors are not included in this report except when specifically mentioned.

Of the 263 persons giving no reactions before vaccination, 43 (16 per cent) reacted to one or more of the subsequent tests; 23 (9 per cent) reacted to more than one of the standard serologic procedures. When reactions to all four tests (Kolmer, Kline, Hinton and Mazzini) are considered, a total of eighty positive and doubtful reactions were obtained. Table 4 shows the number and distribution of these reactions.

In the majority of instances the strongest reaction was doubtful or weakly positive; fifty-one of the total of eighty reactions were only ± or 1+; in 26 of the 43 persons the strongest reaction was ± or 1+. Four

following vaccinia. Under the conditions of this study, the Kolmer test was the most specific, since positive reactions were obtained in only 7 persons, but 4+ reactions were noted in 5 of this group. There were 13± or 1+ reactors to the Kline test but only 1 with a stronger reaction. The Hinton and Mazzini tests gave doubtful or positive reactions in 31 and 28 persons respectively. Because the Eagle and Kahn tests were not performed on all specimens, the relative incidence of false positive reactions cannot be determined exactly, though in each case it appears to be intermediate between that of the Kline and that of the Mazzini test. It is interesting to note that all six technics gave this type of false positive reaction to some degree. In several cases strong reactions were given by most of the technics used; such reports might have presented diagnostic problems to the clinician had the specimen been collected as a part of a routine physical examination.

Of the 4 cases in which the diagnostic Kline test gave a reaction before vaccination, 1 showed no reaction to the Kline test after vaccination, though the Mazzini reaction was ±. In a second case (1+) the reaction



Average positivity of reaction to serologic tests for syphilis on the first postvaccination specimen of 271 persons

after vaccination was the same, but in addition a doubtful reaction to the Hinton test was reported. In the remaining 2 cases the Kline reaction was stronger after vaccination, in 1 (±) it became 1+, and in the other Mazzini 1+ and the Hinton and Eagle were each ±. (2+) it became 4+, the Kolmer became 2+, the

Although it was suggested that specimens be collected from twelve to fourteen days after inoculation, not all the patients submitted exactly to this routine and in many cases the first test was performed much later. An attempt has been made to analyze the data so as to determine the incidence of false positive reactions to the various tests with respect to the time interval following vaccination. When the first specimen was submitted from fifteen to twenty-one days after vaccination, positive reactions were more common with the Hinton, Mazzini and Eagle tests. On specimens on which the first test was performed from twenty-two to twenty-eight days after inoculation the Kolmer, Kahn and Kline tests were more likely to give a positive reaction, as shown in the accompanying chart.

The reactions remained positive for as long as two months in many of the persons tested; in a few the reactions were still positive after four months. One (Kline 1+) was still present at one hundred and sixty-four days; in this case reactions with the Kolmer, Kahn,

TABLE 5—Three Cases in Which False Strongly Positive Serologic Reactions Were Obtained on Single Specimens

	9/24	10/10	10/24	11/19	
Kline	—	—	±	—	
Kolmer	—	—	4+	—	
Hinton	—	—	—	—	
Mazzini	—	±	3+	—	
Eagle	—	—	—	—	
Kahn	—	—	3+	—	
	9/23	10/7	10/24	1/8	3/6
Kline	—	—	1+	1+	1+
Kolmer	—	—	4+	—	—
Hinton	—	—	—	—	—
Mazzini	—	—	3+	—	—
Eagle	—	—	3+	—	—
Kahn	—	—	3+	—	—
			9/27	10/23	1/23
Kline			—	2+	—
Kolmer			—	4+	—
Hinton			—	2+	—
Mazzini			—	4+	—
Eagle				3+	—
Kahn				2+	—

plus reactions to any of the tests were reported for only 6 of the 263 persons studied (2.3 per cent). Two plus or stronger reactions were reported on specimens from 17 persons (6.5 per cent).

Among the various tests there was considerable difference in the incidence of the false positive reactions

Eagle and Mazzini tests had been positive at thirty-one days but were negative at one hundred and seven days and again at one hundred and sixty-four days.

The Kahn verification test was performed on the serum of 1 person who has not previously been mentioned in this report because he was in a smaller group studied several months later. On a specimen collected at the time of vaccination and another collected twenty-four days later the Kline diagnostic, Kolmer Wassermann, Hinton and Kahn tests gave negative reactions. A third specimen collected forty-three days after vaccination gave the following reactions: Kline diagnostic 2 +, Kolmer Wassermann negative, Hinton 2 +, Kahn 3 +. A fourth specimen collected forty-seven days after vaccination gave the following reactions: Kline diagnostic doubtful 1 +, Kolmer Wassermann negative, Hinton 3 +, Kahn doubtful 1 +. Kahn verification tests performed on the latter 2 specimens gave "the syphilitic type" reaction. It might be well to recall here that Kahn has pointed out that, while a negative verification test is strongly suggestive of the absence of syphilis, "there are no data available which establish that a positive verification reaction means syphilis in every instance."⁹

COMMENT

The incidence of false positive serologic reactions following vaccinia might have been determined more accurately had this survey been conducted in a different manner. The study served its initial purpose, which was to determine whether such reactions occur. Bay and Sankstone had stated that their number must be less than 1 per cent, but we found false doubtful or positive reactions in 16 per cent of 263 persons studied after primary vaccinia.

Such reactions may be strongly positive and may therefore be a source of confusion to the clinician. They may persist for several months after vaccination. Testing by multiple methods increases the recognized number of positive reactors, as shown by the fact that each of six standard diagnostic technics resulted in this type of false positive reaction. The different tests usually gave varying degrees of reaction; rarely were all tests positive on the same specimen. In the only case in this series in which the Kahn verification test was performed the reaction was of the syphilitic type; Thomas and Garrity⁶ had a similar experience.

Many of the persons in this series were tested only once after vaccination, and it is now known that this test was performed too early to have all the false reactors recognized. The maximum height of positivity was not always recorded at the first test, and it is likely that tests performed on a greater number of specimens would have led to recognition of additional positive reactors among those persons whose first postvaccination test was negative to even the Kline exclusion test.

The data submitted in this report suggest that recognition of the highest possible number of false positive reactions would require the performance of tests on specimens collected more frequently through the period from two to six weeks after vaccination. If this procedure had been followed, the incidence of false reactions would probably have been quite different, and there might also have been a difference in the relative number of false reactions demonstrated by the different diagnostic technics.

ABSTRACT OF DISCUSSION

DR. FRANCIS E. SENEAR, Chicago: Dr. Lynch and his co-workers have presented a careful study of the effect of vaccination in the production of such reactions and, though the first mention of this was made in the literature only last year, make it apparent that vaccinia must be added to the list of conditions capable of producing a false positive reaction for syphilis. Apparently these false positive reactions due to vaccinia follow the pattern of those evoked by some other disorders, a pattern which should always arouse suspicion as to the source of the positive finding. Such reactions are apt to be weakly positive, vary in intensity with different tests or with the same test in different laboratories and show fluctuation in titer from day to day with the same test performed in the same laboratory. In this particular disease it would seem as though we have available a condition which offers great possibilities for study of these biologic false positive reactions, because in the other diseases in which such reactions are obtained we never know whether the patient is to have them or not; we are often uncertain as to the qualification of the laboratory performing previous tests, if we can find that they have been performed previously. But with a disorder of this type, in which, if, as Dr. Lynch and his co-workers' figures show, 16 or 32 per cent of the patients will develop some degree of positive reaction, in which one can check the state of the reaction before the vaccination is performed, it seems to me there is an opportunity for very extended study. One can hardly say yet that the verification reactions, such as Witebsky's or the Kahn verification, can solve this problem. I see Dr. Kline sitting over here and I have no doubt that he will be able to say something about the implications presented by these changes in association with vaccinia. The authors are to be congratulated on having made available so quickly some definite information as to the effect of the commonplace procedure of vaccination in giving rise to false positive reactions for syphilis for temporary, though sometimes prolonged, periods. I would like to speak of the apparently greater specificity in this study of the Kolmer complement fixation reaction. This observation would further support the view held by many observers that, when two or more tests are to be used jointly, one of them should be of a complement fixation type.

DR. B. S. KLINE, Cleveland: Nonspecific reactions in tests for syphilis are easier to explain than are the specific reactions. In every laboratory, even the practicing physician's small laboratory, there are many things which will flocculate the antigen particles in the emulsions used for the detection of syphilitic reagin. These lipid particles have certain physicochemical properties that permit them to be flocculated by dehydrating agents like alcohol and by various electrolytes, including acids and ordinary salts. It is remarkable therefore that these emulsions may be used successfully in the detection of syphilis. Before a false positive test is regarded as a biologic reaction, it is the duty of the serologist to make sure that the reaction is not caused by adventitious material in the antigen. Plain alcoholic extract antigens, for instance, contain so much adventitious material that causes so many nonspecific reactions that they are no longer used in the serodiagnosis of syphilis. Furthermore, my associates and I discontinued the use of Kahn antigen dilution some years ago because in tests at low temperature it gave nonspecific reactions in too great number. Subsequently Kahn antigen was found to contain either insoluble or water soluble impurities. Satisfactory results with this indicator, it was found over ten years ago, can be obtained only at a temperature of 70 F. or over. We have found that even carefully prepared slide test antigen contains impurities that may be removed by extraction with water. At Western Reserve University Dr. Wellman and Dr. Lankelma are making a chemical study of antigens. In another few years they will find a way of isolating the most potent and most specific substance in heart powder in pure form, and then all the headaches for the serologists and a great many for the dermatologists and syphilologists will be eliminated. The use of purified antigens, however, doesn't mean that in malaria and leprosy and in lower animals there won't be a great many nonspecific reactions. As far as testing animal serums is concerned, it should be remembered that the majority of untreated serums of syphilitic

9. Kahn, Reuben L.: A Serologic Verification Test in the Diagnosis of Latent Syphilis. Arch. Dermat. & Syph. 41:817, 1940.

individuals give no reactions with antigen emulsions. The serums must first be heated or there is no reaction. Another way to increase the flocculating capacity of serum is to add a small quantity of electrolyte, such as sodium chloride, in the proper concentration. Horse serum contains more abundant electrolytes apparently than human serum, and because of this there is no more reason for dragging in horse serum to test its ability to flocculate antigen emulsions than for taking calcium chloride or other electrolyte out of a bottle to test its action on antigen emulsions. In leprosy and malaria it may be found that some chemical substance other than reagin is produced in excess and that it thereby causes the flocculation of the antigen particles.

DR. ADOLPH B. LOVEMAN, Louisville, Ky.: Dr. Lynch and his co-workers have rendered a great service to the dermatologists in calling attention to the false positive reactions following vaccination. About four months ago, I saw my first case, in a nurse. In this particular case the Kahn, Kline diagnostic and Kline exclusive tests were all positive but the Kolmer Wassermann test was negative. This was repeated in several laboratories. The Wassermann test in this particular case never became positive. About three months later a soldier came in on a Friday and wished to be married the next day. He also had a positive Kahn, Kline diagnostic and Kline exclusive test and a negative Kolmer Wassermann test. This likewise was repeated in several laboratories. At that time I was suspicious that it was a postvaccinial reaction and we sent the test to Dr. Kahn for his verification test, who reported a biologic type of reaction. This case was rather dramatic in that all tests including a reply from Dr. Kahn were completed in twenty-four hours and the soldier got married according to schedule. These are important cases. In the few selected cases in which repeated tests were made following vaccination for recurrent herpes, in which there were no takes, I did not get any positive reactions from the Kahn, Kline or Wassermann tests.

DR. CHARLES R. REIN, New York: I agree with Dr. Kline that many of the false positive serologic reactions are of the technical type and that a considerable number of these technical false positives will be eliminated with the purification of the antigens. There are, however, a number of diseases and conditions which may produce transient and even permanent biologic false positive reactions. Dr. Lynch and his collaborators have shown today that such false positive reactions may develop following smallpox vaccination. I have encountered many biologic false positive reactions immediately following acute upper respiratory infections. The blood of these patients, however, usually becomes negative in three to four months. Dr. Chargin and I found but few false positive reactions in a group of 119 patients with variella, scarlet fever and measles, in whom the temperature ranged up to 105 F. The clinician must be aware of the fact that biologic false positive reactions may occur and he must be on the lookout for them. Unquestionably, many a person has been stigmatized as syphilitic and indeed given treatment purely on the basis of a positive test occurring in routine examination in the course of or immediately following a non-syphilitic disease.

DR. ARTHUR G. SCHOCH, Dallas, Texas: I would like to ask whether or not in the group of supposedly syphilitic persons the authors established that diagnosis on the basis of serologic results alone? If so, what type of serologic reaction did they consider of such little significance that it was not indicative of true syphilitic infection? Did they do any quantitative determinations? I think we are quibbling when we start differentiating between what constitutes a biologic false positive and a technical false positive reaction and possibly false positive reactions in animals. They are false, and as they are reported to us they are positive. There is a clerical false positive reaction which can be cleared up by merely repeating the test in the same laboratory. Clerical false positive reactions do occur and I would just like to call attention to the fact that sometimes they get the wrong number on the right tube.

DR. FRANCIS W. LYNCH, St. Paul: In reply to Dr. Schoch's question, these are the criteria which we have applied in the diagnosis of syphilis in college students. If they are observed strictly, there is little danger of false diagnosis based on sero-

logic reactions such as we reported today; nevertheless, we believe it worth while to try to demonstrate the cause of every false positive or doubtful reaction. Another question by Dr. Schoch suggested the possible value of applying quantitative studies when dealing with questionable serums. We are unable to report any experience with quantitative tests. Dr. Kline's discussion emphasized the newer technical knowledge which can be applied to prevent or minimize the number of false reactions. Such details are particularly of importance to the serologist. It is only by further recognition of these and similar facts that serologic reports can become more dependable. Yet the clinical syphilologist must of necessity accept the report which is given to him. His primary concern is not the determination of the cause of the falsity but rather the absence or presence of syphilis. Dr. Loveman mentioned two previously unreported cases of false reactions associated with vaccinia. Other clinicians must have had similar experiences but have probably thought that the incidence of such an occurrence was much less than our studies suggest. We have not critically analyzed the reports of serologic studies following immune reactions to vaccinia, but in several instances we have noted doubtful or weakly positive reactions. Dr. Rein mentioned the association between false positive reactions and upper respiratory infections, a point which is also demonstrated in a report by Clifton and Heinz (*THE JOURNAL*, May 4, 1940, p. 1731). It is likely that false reactions accompany many febrile diseases to a much greater extent than has previously been realized.

SOME THERAPEUTIC EXPERIENCES WITH HODGKIN'S DISEASE

OVID O. MEYER, M.D.

MADISON, WIS.

The cause of Hodgkin's disease remains obscure, but the theories of the causative factors are well known. The possible significance of the recent reports of Wise and Poston,¹ who have demonstrated the frequent presence of *Brucella melitensis* in the lymph nodes of patients with lymphogranulomatosis, is yet to be established. These workers have analyzed their results with commendable objectivity and without ascribing a final etiologic relationship to these organisms. Dr. E. A. Birge² has cultured specimens from the lymph nodes of 10 patients with Hodgkin's disease seen at the Wisconsin General Hospital but has been unable to demonstrate *Brucella* organisms. It should be observed, however, that brucellosis is much less common in Wisconsin than in the regions where the patients of Wise and Poston¹ live. This factor has already been weighed by these observers, and further discussion of it is unnecessary.

The therapy of Hodgkin's disease is fairly well standardized at present. It is generally agreed that roentgen ray or radium therapy is indicated in practically all cases. Some authors (Desjardins,³ Jacox, Pierce and Hildreth⁴) advocate early irradiation of all sites of lymph nodes. Others, the majority, prefer to direct treatment only to areas where disease appears. All are in essential agreement that the therapy is merely a palliative except in rare cases and that therefore the aim should be to alleviate symptoms and, if possible,

From the Department of Medicine, University of Wisconsin Medical School.

Read before the Section on the Practice of Medicine at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 4, 1941.

1. Wise, N. B., and Poston, Mary A.: The Coexistence of *Brucella* Infection and Hodgkin's Disease, *J. A. M. A.* 115:1976-1984 (Dec. 7) 1940.

2. Birge, E. A.: Personal communication to the author.

3. Desjardins, A. U.: Radiotherapy for Hodgkin's Disease and Lymphosarcoma, *J. A. M. A.* 99:1231-1236 (Oct. 8) 1932.

4. Jacox, H. W.; Pierce, C. B., and Hildreth, R. C.: Roentgenologic Considerations of Lymphoblastoma, *Am. J. Roentgenol.* 36:165-168 (Aug.) 1936.

prolong life. It appears that relief of symptoms is about as satisfactory—and often it is highly satisfactory—when only one or more of the involved areas is treated as when extensive irradiation is employed.

It is not my purpose here, however, to argue for one or the other method of management or to analyze treatment in a series of cases for the purpose of establishing the value of roentgen therapy. Rather, I wish to cite some experiences we have had in order to point out certain lessons learned therefrom: to demonstrate some of the hazards that attend irradiation, to indicate some of the complications that patients experience without apparent untoward effects, to demonstrate the favorable results that may follow properly controlled roentgen therapy and, finally, to urge a more optimistic attitude toward the individual patient, for there is no known prognostic guide which is completely reliable in any given case. Although the average duration of the disease is about three years, neither the patient's age nor sex, the extent of the disease, the status of the blood nor the roentgenographic findings will indicate

projecting from each side at the level of the aortic arch. There was some compression of the trachea near the bifurcation.

Irradiation of the mediastinum was decided on although no lymph node was available for biopsy. After being given two small doses of 100 r each to the anterior and the posterior mediastinum on successive days, the patient had severe dyspnea and signs of complete atelectasis of the right lung. She was unimproved for four days and then began to cough violently, raising much mucus, and the lung reexpanded. Therapy was then resumed, and eight more treatments were given without untoward effects.

On Feb. 1, 1939 a roentgenogram of the chest showed definite shrinkage of the mediastinal mass and there was subjective improvement. Two months later she was readmitted with the complaint of recurrence of difficulty in breathing. Since her admission of 1938 she had had tenderness and enlargement of the lymph nodes in the right axilla and the right side of the neck. Biopsy of a supraclavicular node showed endothelial proliferation, many Sternberg-Reed cells and eosinophils and diffuse infiltration by polymorphonuclear leukocytes. There was frank pus about the node, from which diphtheroid organisms grew on culture. A roentgenogram of the chest showed

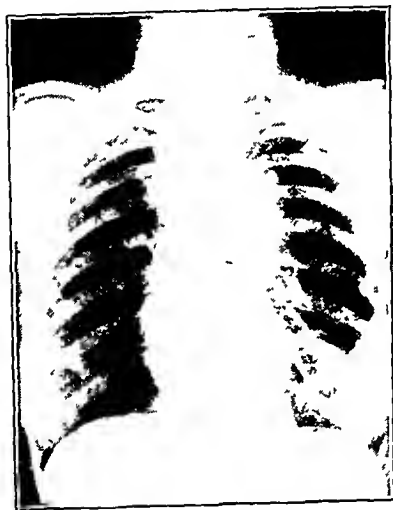


Fig. 1.—Appearance of the chest of patient M. K. at the time of first admission.



Fig. 2.—Appearance of M. K.'s chest after irradiation of the mediastinum, demonstrating atelectasis of the right lung.



Fig. 3.—Appearance of M. K.'s chest Feb. 1, 1939, two months after therapy.

the expectancy of comfortable life. Hence the physician is justified in taking a more optimistic view in his dealings with the individual patient than he usually does at present.

REPORT OF CASES

CASE 1.—Mrs. M. K., a housewife aged 29 who had been a registered nurse, was admitted to the hospital in November 1938. In May 1937, while pregnant, she had a pain in the chest just behind the sternum. After the birth of her child in September, the pain became worse. Subsequently it subsided, but five weeks before admission she had shortness of breath. As this progressed, a productive cough developed. A roentgenogram of the chest showed widening of the mediastinum. The menses had ceased again four months before she came under my observation.

Physical examination showed the patient to be well developed, undernourished and rather uncomfortable and to have slight cyanosis, cough and, on slight exertion, severe dyspnea. The veins of the neck were distended. There were signs of a mediastinal mass, but there was no enlargement of the superficial lymph nodes. Pelvic examination revealed enlargement of the uterus to the size produced by a 3 or 4 month pregnancy.

The blood showed a hemoglobin content of 10.6 Gm., 3,620,000 erythrocytes and 20,700 leukocytes, with 92 per cent neutrophils. An Aschheim-Zondek test gave positive results. Roentgenograms of the chest showed a mass of soft tissue

that the mediastinum had become enlarged to approximately its former size.

Another course of roentgen therapy was started. After three treatments of 150 r to the anterior and the posterior mediastinum given over four days, signs of atelectasis of the middle and lower lobes of the right lung developed. A thick, gummy material was aspirated with a bronchoscope. The patient was then able to complete the total course of thirteen treatments uneventfully.

In May 1939 the patient was delivered of a normal child. In June she returned to the hospital and received roentgen therapy to the mediastinum and the right axilla. In October she returned once more, with signs of nearly complete atelectasis of the right lung. The mediastinal mass was not especially large, but further therapy was given. Apparently immediately thereafter, the patient became pregnant for the third time, and in January 1940 a therapeutic abortion was performed.

Subsequently, she was admitted to the hospital on four occasions. Atelectasis of the right lung persisted. At one time peribronchial fibrosis of the left lung was demonstrated. Fluid accumulated in the right pleural cavity from time to time. Ascites developed, and paracentesis was required. Considerable deformity of the chest, with scoliosis, appeared.

The patient's final admission to the hospital occurred in February 1941. She had lost weight and was pale and had anasarca. There was gross enlargement of a left supraclavicular node. The atelectasis of the right lung continued, and a roent-

genogram of the chest showed a well defined, rounded rarefaction about 4 cm. in diameter just below the level of the left clavicle. The patient died on February 19.

Postmortem examination revealed no disease of the lymph nodes except in the mediastinum. All bacteriologic studies, including search for tubercle bacilli, gave negative results. There was extensive fibrosis of the right lung, with fibrosis about the large vessels, which showed endarteritis. These changes had produced an increased load on the heart, and chronic cor pulmonale resulted. The cavity in the left lung showed a wall of granulation tissue about an abscess. In the wall there were many atypical reticuloendothelial cells.

COMMENT

This case demonstrates several points. The patient had three pregnancies, of which two went to term, during the course of her illness. It was not demonstrable that they affected the illness favorably or unfavorably. One does not, of course, know what the outcome would have been had the pregnancies not existed, but the duration of illness was about forty-five months, which is as long as the average.

CASE 2.—Mrs. H. J., a housewife aged 40, was referred on July 25, 1940 to the Wisconsin General Hospital from a sanatorium where a diagnosis of pulmonary tuberculosis and exfoliative dermatitis had been made. Previously she had had pruritic lesions on the forearms and the scalp, had fatigued easily and had experienced night sweats and pain in the right part of the thorax due to pleurisy. She was sent to us because of the troublesome condition of the skin. There was no history of contact with tuberculosis.

Physical examination revealed emaciation and a severe generalized dermatitis involving the scalp particularly. There was generalized erythema, with thickening and scaling and bullous lesions on the fingers. There were signs suggesting infiltration at the apex of the right lung. Enlarged lymph nodes were noted in the cervical, inguinal and epitrochlear regions, the largest less than 2 cm. in diameter. The liver was palpable; the spleen was not palpated.

Laboratory studies revealed a hemoglobin content of 11.1 Gm.; 5,330,000 erythrocytes and 10,600 leukocytes, with 80 per cent neutrophils, 3 per cent monocytes, 8 per cent lymphocytes, 8 per cent eosinophils and 1 per cent basophils. Many examinations of the sputum and the gastric contents were nega-



Fig. 4.—Appearance of M. K.'s chest in December 1939, when atelectasis had become permanent.



Fig. 5.—Appearance of M. K.'s chest eight days before death. There are definite thoracic scoliosis, persistence of atelectasis and a cavity in the left infraclavicular region close to the sternum.



Fig. 6.—Appearance of H. J.'s chest at the time of first admission, July 1940.

The production of atelectasis after irradiation of the mediastinal masses is a hazard that must always be considered. It is supposedly due to reaction and swelling of the mass, with bronchial compression. Furthermore, there may be bronchial reaction and hypersecretion. Actually, however, atelectasis is not common, and it is rather astonishing that in the foregoing case small doses cautiously applied repeatedly produced it. When mediastinal lymphomatous masses exist, the possibility of beginning therapy at a distant site or with general irradiation should perhaps be considered.

Finally, the pathologic changes are of interest. The cavitation appears to be a result of actual infiltration of the lung with the tissue of Hodgkin's disease, with perhaps a secondary factor of infection. It is well recognized that pulmonary involvement occurs in Hodgkin's disease. The additional grosser findings of extensive fibrosis and endarteritis, which were, at least in large part, a result of intensive irradiation, the total dose over the two years being large, with resultant chronic cor pulmonale, emphasize another hazard of irradiation to the mediastinum and the lungs.

For tubercle bacilli, and inoculated guinea pigs remained normal. Examinations were negative for fungi. A stereoscopic roentgenogram of the chest showed a conglomerate opacity at the periphery of the fourth interspace laterally and some rather isolated areas of nodular infiltration in the midportions and in the lower part of the right lung field. On the left there was a somewhat homogeneous opacity extending from the first interspace anteriorly to the level of the fifth rib. There was pleural thickening peripherally in the lower half of the left lung field. A roentgenographic study of progress on September 7 showed that the condition had cleared in some areas and had extended in others. Bronchoscopic study at this time revealed no abnormality.

It was established that the dermatitis was due to contact with a proprietary hair lotion containing marrow oil. This lesion cleared with local applications and the avoidance of contact with oils. Some months later a patch test with the marrow oil of the shampoo produced a violent reaction.

An inguinal lymph node was removed on August 22, and microscopic study of this revealed chronic hyperplastic lymphadenitis.

Since the pulmonary lesions persisted and no explanation for them was available, an epitrochlear node was excised and examined microscopically. This showed scarring, some loss of structure, eosinophils, endothelial proliferation and Sternberg-

Reed cells. Dr. C. H. Bunting and Dr. W. D. Stovall agreed that the changes were those of Hodgkin's disease.

The patient was then given ten treatments of 150 r each to the anterior and the posterior part of the right lung alone over the twelve days between September 26 and October 7. The total dose was 3,000 r. A roentgenogram taken on October 8 showed a clearing of the infiltrative change in both

lung fields. Only a few small areas remained in each lung. The patient was again seen on November 7. She had felt well in the interval and had gained 15 pounds (6.8 Kg.). A few scattered superficial nodes were palpable. Roentgenograms showed that the lungs were still clear save for a few small infiltrations. The superior mediastinal shadow had broadened slightly, particularly on the right. It was decided not to irradiate at this time, and the patient was discharged. She has remained well, and another roentgenogram of the chest made in February of this year showed the lungs to be normal.

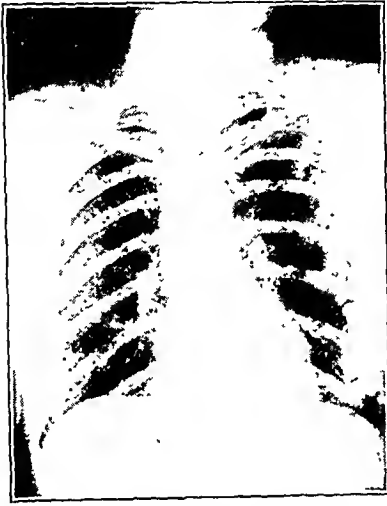


Fig. 7.—Appearance of H. J.'s chest in February 1941. A roentgenogram in October 1940 had shown a similar degree of clearing.

COMMENT

The illness of this patient was a diagnostic puzzle for many weeks after admission. The suspicion of Hodgkin's disease, which was slow in developing, was allayed by the first biopsy, which revealed lymphadenitis. Examination of inguinal nodes is untrustworthy; a node from any site but the groin is usually more satisfactory, for often the inguinal node will show lymphadenitis, as it did in this case, whereas nodes from other sites will be affected by the primary disease.

Hodgkin's disease, in the opinion of Piney,⁵ is a disease of the reticuloendothelial system. Hence manifestations of the disease may predominate at any of several sites, including the lungs. One must recognize that intrathoracic involvement may be of many types other than disease of the mediastinal lymph nodes.

Moolten⁶ has discussed the subject at length and has recorded the many changes, infiltrative, miliary and pneumonic, as well as invasion from mediastinal lymph nodes, that may occur. Versé⁷ has stated that in about 10 per cent of cases of Hodgkin's disease of the lung the primary lesion is pulmonary.

The response to irradiation in case 2 was striking and gratifying. Possibly it was overconservative to limit irradiation to one lung, but no disadvantage could result from this caution, and the response in the two lungs was not completely unexpected in view of the diagnosis, since occasionally one sees an effect of treatment at a distance from the primary site of irradiation in cases of lymphoblastoma. Unquestionably a certain amount of scattered radiation reached the left lung.

CASE 3.—E. K., a boy aged 14 who had played football on his high school team, was admitted to the hospital on Nov. 26, 1940. In 1933 he had noticed a progressive painless enlargement of lymph nodes in his neck. A biopsy was done, a diagnosis of Hodgkin's disease was made and roentgen therapy was instituted, with prompt disappearance of the masses. Thereafter he had treatments when necessary. In July 1940 he had pains in the back and in the calves of the legs which rapidly became more severe and were stabbing on movement of the hips. Weakness in the lower extremities became severe, and from July until admission the patient had been bedridden. His physicians were pessimistic regarding his condition, and only symptomatic therapy was instituted.

Physical examination revealed that the patient was uncomfortable, pallid and bedridden, with firm, nontender, discrete, movable nodes, up to 5 cm. in diameter, in the left cervical region. The spleen and the liver were palpable below the costal margin. There was weakness of the legs, especially of the flexors and the abductors of the thigh, the extensors of the leg, and the dorsal and plantar flexors of the feet and toes. The knee jerk and achilles tendon reflexes were exaggerated, and there was bilateral ankle and patellar clonus. The Babinski reflex was present, and confirmatory tests gave positive results. The muscles of the calves were somewhat atrophic. The sensory picture was bizarre, with widespread hypesthesia, slight at the level of the eighth dorsal vertebra persisting to the lower part of the abdomen, at the level of the twelfth dorsal vertebra, where there were normal or hyperesthetic reactions. In the legs the sensory changes took place primarily at the levels of the third and fourth lumbar vertebrae. The vibratory sense was impaired in both the lower extremities. The neurologic consultant, Dr. M. J. Musser, expressed the belief that the patient had intramedullary lesions at the levels of the fifth and sixth dorsal vertebrae and in addition an extramedullary lesion affecting primarily the fourth lumbar vertebra. Motion of the spine was limited by pain, and there was a gibbus between the second and third lumbar vertebrae.

The blood showed a hemoglobin content of 12.2 Gm., 4,690,000 erythrocytes and 13,200 leukocytes, with 74 per cent neutrophils. A roentgenogram of the spine showed an early sclerotic density of the body of the second and sixth dorsal vertebrae. There were a distinct gibbus at the level of the third lumbar vertebra and minimal changes in the body of this vertebra. A roentgenogram of the chest showed a slight increase in the mediastinal shadow indicative of enlargement of lymph nodes.

The patient received six treatments of 200 r each to the dorsal and lumbar portion of the spine. Before his discharge from the hospital on December 12 most of the pain in the back had subsided and some muscular power had been regained.

Two months later he returned to the outpatient department. All pain had subsided, he had gained about 20 pounds (9.1 Kg.) and he was up and about on crutches. The liver and the spleen were no longer palpable, and there was no enlargement of lymph nodes. There was no spinal tenderness. Reflexes were still hyperactive in the lower extremities, and there was a Babinski reflex on the left. Minimal sensory changes and impairment of the vibratory sense persisted below the knees.

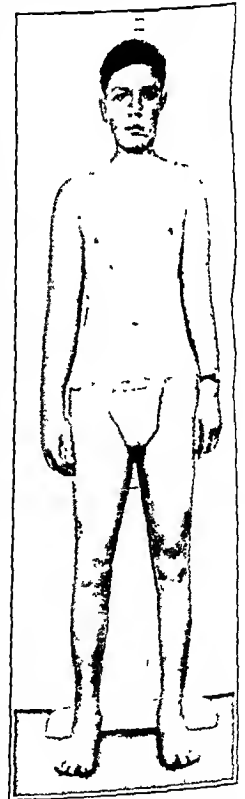


Fig. 8.—E. K. four months after completion of roentgen therapy to the spine and cord.

5. Piney, Alfred: Endotheliomas with Especial Reference to Those Growing in Compact Form, *Arch. Path.* 2: 301-317 (Sept.) 1926.
6. Moolten, S. E.: Hodgkin's Disease of the Lung, *Am. J. Cancer* 21: 253-294 (June) 1934.
7. Versé, M.: Die Lymphgranulomatose der Lunge und des Brustfells, in Henke, F., and Lubarsch, O.: *Handbuch der speziellen pathologischen Anatomie und Histologie*, Berlin, Julius Springer, vol. 3, 3, 1926.

The hemoglobin content was 15 Gm. and the erythrocyte count 4,170,000. No treatment was advised, and the patient returned home.

He came to the outpatient department again on April 2, walking with a wide base, without crutches. He had gained 17 pounds (7.7 Kg.) and now weighed 153 pounds (69.4 Kg.). Deep tendon reflexes were about normal; the Babinski reflex



Fig. 9.—The sixth dorsal vertebra of E. K., before and after irradiation.

was present bilaterally. There was no enlargement either of lymph nodes or of the spleen. The liver was just palpable. Roentgenograms of the spine showed a return to normal of the appearance of the vertebrae. The blood count was essentially normal.

COMMENT

Case 3 emphasizes the striking improvement that may follow irradiation of the spine when lesions of the spinal cord exist. Vertebral lesions in Hodgkin's disease are common. If treatment is not vigorously instituted, compression fracture and paralysis may result. In this case there was nothing to suggest that this had occurred, but disease of the spinal cord existed as a result of lymphogranulomatous involvement. Lesions of the cord are not rare; often laminectomy has been done and tissue removed surgically. This procedure is ordinarily unnecessary, especially if proper treatment is instituted early. Fortunately it was possible to repair the damage in case 3.

This case also emphasizes how difficult the prognosis of Hodgkin's disease is and how improper is an attitude of complete pessimism. The boy had Hodgkin's disease first when he was 7. The consensus is that children and young adults are more likely to have a shorter span of life than those who develop the disease at later ages. But one cannot say that this will be true in any specific case. Further, even though, as is not infrequently the case, involvement of the vertebrae and the cord is likely to be a late manifestation of the disease, the laissez-faire attitude is not justifiable. With only a modicum of roentgen therapy patient 3 has already had months⁸ of freedom from pain, and he is up and about after previous months of unnecessary pain and the restrictions of a bedridden invalid.

CONCLUSION

No doubt almost every one who treats Hodgkin's disease could duplicate experiences such as those I have set down, each of which furnishes its lesson. In emphasizing the hazards and the desirability of greater optimism I have had no intention of minimizing the importance of continued search for the cause of Hodgkin's disease and better therapeutic measures or cure.

8. This patient was seen again July 24, and he is still well. He has received no irradiation since December 1940.

ABSTRACT OF DISCUSSION

DR. RAPHAEL ISAACS, Chicago: Dr. Meyer has chosen his patients well in order to illustrate certain points. A problem which comes up frequently is the question of Hodgkin's disease and pregnancy, and the question also of pregnancy and roentgen treatment. The patient described by Dr. Meyer received thirteen roentgen treatments while she was pregnant. I judge this would amount to almost 2,000 roentgens given to the patient during pregnancy, and presumably a normal child was born. That point is important, because there is much in the literature to make one worry about whether roentgen rays will affect the child or not. The second point is that the literature seems to indicate that Hodgkin's disease is aggravated by pregnancy. However, this patient appeared to go through pregnancy without any immediate exacerbation of the disease. Dr. Meyer points out the presence of Hodgkin's lesions in the lungs and the danger of atelectasis. The involvement of the bone and its dramatic improvement with roentgen therapy I can confirm with patients in my own experience, and the outlook sometimes is good. Pregnancy during Hodgkin's disease is quite different from pregnancy and lymphosarcoma. Lymphosarcoma may recede during pregnancy, with apparent disappearance of all signs of the disease. The lymph glands may become normal in size, but they enlarge again after the baby is born. What does one do to Hodgkin's tissue when one gives roentgen treatment? Presumably one decreases the number of lymphocytes in the Hodgkin's glands without gross effect on fibrous tissue. Fibrous tissue is the type of tissue which forms the bulk of the large glands. This is an important point to remember in trying to reduce a gland to normal size. It is felt that Hodgkin's disease is more of an infection than a neoplastic disease, and for that reason the future is looked forward to with more hopeful prognosis. Hodgkin's disease is twice as frequent in males as in females, and this will, I think, furnish a clue to treatment in the future. The characteristics of Hodgkin's tissue as it invades other tissue is not like a neoplastic cell invading tissue, but it resembles what would happen if the invaded tissue had become infected.

DR. W. EDWARD CHAMBERLIN, Philadelphia: Dr. Meyer is right in pointing out that we learn about Hodgkin's disease by these individual cases. His 3 cases illustrate very different types of Hodgkin's disease and very different responses to therapy. I suppose the reason the manifestations of Hodgkin's disease are so protean is that it is a disease of the reticulo-endothelial tissue, which, after all, is found in most of the organs of the body. Cases have been seen in which the disease simulated Riedel's struma. Even the surgical pathologist, looking at tissue removed for clinical diagnosis, agreed that the tissue was probably Riedel's struma, but we found later on it was Hodgkin's disease primary in the thyroid gland. I had a case that simulated scabies for a long time. The patient was over a year in the skin clinic with itching of the skin. There were no glandular masses anywhere and it was thought to be scabies because of the intense itching. It turned out to be Hodgkin's disease and manifested itself in the thorax and peripheral lymph nodes. There is a great deal of difference in the roentgen ray diagnostic aspects of primary Hodgkin's disease in the lung and in the mediastinum. In the mediastinum a typical smoothly outlined, apparently encapsulated mass is seen, while, if the lung is involved, finger-like infiltration is noted in the lung tissue. I saw a case in which it simulated breast cancer in a woman aged 37 because it was not believed that the mass in the axilla came before the mass in the breast. Occasionally there are cases in which there are no masses at all. There was such a case at Stanford about fifteen years ago. Patients die with various diagnoses when really the condition is Hodgkin's disease. There are many diagnoses missed. One has to be more on the lookout for Hodgkin's disease. The diagnosis is not going to be made unless one remembers that it is one of the possibilities in these cases with such remarkable protean manifestations. I think Dr. Meyer is close to the secret of success in treatment, but I think he has to go a step further. He is willing to let a patient go without treatment at times, and I think that is important. One rule is important in the management

of Hodgkin's disease. We are only palliating; we are not curing, and therefore we must try to make it definitely palliative. Big doses sometimes make the patient feel miserable, and remarkable results can be obtained with minute doses. I have given as little as 20 roentgens to a lesion and have seen it regress. The rule is this: Try to get along with the smallest possible individual and total dose that will keep the patient comfortable.

CANCER OF THE LOWER LIP

TREATMENT WITH RADIATION

JOHN H. LAMB, M.D.

AND

WILLIAM E. EASTLAND, M.D.

OKLAHOMA CITY

The choice of treatment for cancer of the lower lip varies widely in the different medical centers where large numbers of patients with this condition are seen. Physicians who attempted the use of radium and roentgen rays with inadequate doses in the early periods of these forms of therapy immediately turned to more satisfactory means of treating malignant lesions by actual cauterization and plastic surgical operations. These methods have been carefully developed, and their application is successful in producing cures.¹ Equally successful has been the use of irradiation by roentgen rays and radium when employed in sufficient doses.²

In our hands, the most successful treatment for cancer of the lip has been a combination of the gamma rays of radium with unfiltered or lightly filtered roentgen rays. This will provide an adequate dose by treatment on successive days to effect a total, continuous or massive dose, which is infinitely better than the small, inadequate doses formerly given at intervals of one to six weeks. Insufficient doses at short intervals, as employed by the so-called "conservative" radiotherapists, simply encourages the tumor to become radio-resistant, as was proved experimentally by Motttram.³ Yet Martin⁴ stated that as far back as 1913, Pusey⁵ had devised a technic which gave a dose high enough to effect a cure but which, for some reason, was not then generally adopted.

There is no part of the body where cancer can be treated by radiation so satisfactorily as on the lip. This is because (1) the blood supply is good, giving a healthy tissue bed—a prerequisite for the establishment of radio-sensitivity or a good effect from radium; (2) application is easy, and (3) metastasis does not take place until late in 90 per cent of the cases.

Because of lack of space, this article has been abbreviated for publication in THE JOURNAL. The complete article appears in the authors' reprints.

Read before the Section on Dermatology and Syphilology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 4, 1941.

1. Morrow, Howard; Miller, Hnam E., and Taussig, L. R.: Treatment of Epithelioma of the Lip by Electrodesiccation, *Arch. Dermat. & Syph.* 35: 821 (May) 1937. Sutton, R. L. Sr., and Sutton, R. L., Jr.: Diseases of the Skin, ed. 10, St. Louis, C. V. Mosby Company, 1939, p. 729. Wile, Udo J., and Hand, Eugene A.: Cancer of Lip: Results of Therapy in 425 Cases Followed from One to Ten Years, *J. A. M. A.* 108: 374-382 (Jan. 30) 1937.

2. Kaplan, I. L., and Krantz, Simon: Irradiation in Carcinoma of the Lip, *Am. J. Roentgenol.* 34: 381-386 (Sept.) 1935. Cole, Harold N.: Treatment of 202 Cancers of the Skin, *Ohio State M. J.* 17: 14 (Jan.) 1921. Cole, Harold N., and Driver, James R.: Radium Dosage and Technic in Carcinoma of the Skin with Special Reference to Interstitial Irradiation with Platinum Iridium Needles, *Am. J. Roentgenol.* 33: 682-689 (May) 1935. Shelmire, J. B., and Fox, Everett C.: Treatment of Skin Cancer, *South. M. J.* 28: 489-494 (June) 1935.

3. Motttram, J. C.: Production of Epithelial Tumors by Irradiation of a Precancerous Skin Lesion, *Am. J. Cancer* 30: 746-748 (Aug.) 1937.

4. Martin, C. L.: Carcinoma of the Lip and Mouth, *Radiology* 22: 136-148 (Feb.) 1934.

5. Pusey, W. A.: The Principles and Practice of Dermatology, New York and London, D. Appleton & Co., 1907, pp. 890-891.

Classification.—Lain⁶ reviewed the early period (1909 to 1921 inclusive) of the radiation treatment of cancer of the lip and concluded that on the whole the final results had been satisfactory. He stressed the importance of proper dosage and classified the lesions according to the extent of the clinical involvement. Other more recent classifications⁷ have been based on measurements or on the duration and extent of the glandular involvement. We are convinced that a description of clinical characteristics is of the utmost importance, even though a simpler classification may be necessary when one tabulates results.

PRECANCEROUS CONDITIONS

The various kinds of cancer of the lip all seem to originate in certain precancerous conditions such as leukoplakia, sun or "fever" blisters, senile keratoses, keratoses due to irritation from jagged or broken teeth and granulomas arising in razor cuts or from simple scratches.

Leukoplakia.—The lips of many pipe and cigaret smokers show a thin type of leukoplakia, both on the vermilion border and on the mucous surface. This is distributed over definite areas of the lip, usually near the place where pipe, cigar or cigaret is habitually held. At first these are but thin, bluish white spots which are soft and seem to fade into the surrounding labial surface. As the condition develops, the spots coalesce to form small plaques with well margined borders. At the point receiving greatest stimulation—the "smoker's patch"—there is a gradual thickening into leukokeratosis, a slightly warty proliferation spreading at first laterally in all directions, perhaps remaining in this stage for some time but eventually forming an indurated border with a rolled edge and a downgrowth beneath the leukokeratotic surfaces. Such lesions do not ulcerate or metastasize early but may suddenly begin to grow rapidly with a deep proliferation.

Actinic Lesions (Sun or "Fever" Blisters, Actinic Keratoses).—These were by far the most numerous early precanceroses noticed in our series. The patient's description of the earliest lesions is a blistering or sunburn in several areas on the vermilion border of the lower lip. Some had chronic actinic cheilitis of the entire exposed surface of the lip, with dryness, scaling and fissuring. With continued exposure to the sun a more persistent lesion is formed in one area. On examination this is seen to be an erosion, not a herpetic condition. There is usually some degree of superficial crusting; hence the term "fever" blister as used by the patients. These lesions heal but recur with exposure to the sun, after which two types of lesion seem to follow. The first is the formation over the blistered area of a keratotic scale which when peeled off yields a bleeding surface (keratosis solaris). Later a superficial induration spreads under this keratoma and infiltrates into the substance of the lip until a button-shaped induration can be palpated beneath the epithelium. The second type of lesion is one that sometimes develops rather rapidly from the sun erosion. After several recurrences, according to the patients, the erosion fails to heal and progresses into a denuded, slightly elevated, crusted, indurated growth. As this proliferates the borders become slightly elevated and infiltrated. Secondary infection, which invariably takes

6. Lain, E. S.: Treatment of Cancer of the Lip by Radiation, *Arch. Dermat. & Syph.* 6: 434-447 (Oct.) 1922.

7. Richards, G. E.: The Radiologic Treatment of Cancer, 1929-1935: Carcinoma of the Lip, *Canad. M. A. J.* 35: 490-502 (Nov.) 1936.

place, may eventually cause the growth to become fungating. Metastasis sometimes has been noted when the lesion was less than 2 cm. in diameter. This type is also found among the younger, more active patients. A pathologic study is being made on such lesions, but no discussion can be made in this paper except to state that the pathologic process of an early sun blister is similar to that produced by mechanical or chemical burns.

Senile Keratoses.—These are a frequent precursor of cancer of the lip in the aged. Ewing⁸ mentioned cancer arising from seborrheic keratoses on the lip. In none of our cases did the cancer originate in the greasy, somewhat verrucous, yellowish brown, loosely adherent lesion known as seborrheic keratosis. But the dry, scaly, senile keratosis which is firmly adherent to the lip and is gray or brownish yellow may develop into a slightly elevated, indurated, button-like lesion which may proliferate in all directions and project 2 or 3 mm into the substance of the lip before any ulceration takes place. These lesions often become large papillary growths which rise above the surface of the lip and form layers of keratin almost comparable to a cutaneous horn. Lesions arising from senile keratoses in the aged patient may reach huge proportions without showing any evidence of metastasis.

Leukokeratotic Areas.—These may arise from trauma from jagged or broken teeth and seem to have a predilection for the buccal mucosa of the lip, where they grow rapidly, ulcerate and metastasize early.

Superficial Granulomas.—On the lip these are the result of scratches, razor cuts and other abrasions. They tend to remain not more than 1 or 2 mm. in thickness and proliferate peripherally on the surface. They soon form a thin, soft, granulomatous mass which bleeds easily and becomes ulcerated and secondarily infected; the infection may lead to extensive local suppuration. The lymph glands are usually palpable because of an inflammatory reaction to this infection.

MATERIAL

The patients studied are classified according to the size of the lesion and the extent of involvement of the lymph nodes. They were all seen in private practice, and discussion of any patients from the outpatient department of the university hospitals will be so identified. We have found our patients more easily classified in the following manner:

Group 1—lesion 1.5 cm. or less, glands not palpable.

Group 2—lesion 1.5 cm. or less, glands palpable.

Group 3—lesion larger than 1.5 cm., glands not palpable.

Group 4—lesion larger than 1.5 cm., glands palpable.

In our series, 177 of the patients were in group 1, 48 were in group 2, 46 were in group 3 and 47 were in group 4.

The lesions of many patients of groups 1 and 2 were indurated, smooth, button-like proliferations. Some had become ulcerated because of previous treatment with plaster. Many were slightly elevated, with warty or scaly keratotic surfaces, indurated bases and rolled borders.

In groups 3 and 4 the patients had larger, ulcerative, granulomatous growths. Several growths extended over one third of the surface of the lip, while one lesion involved one half and another fully two thirds of the surface.

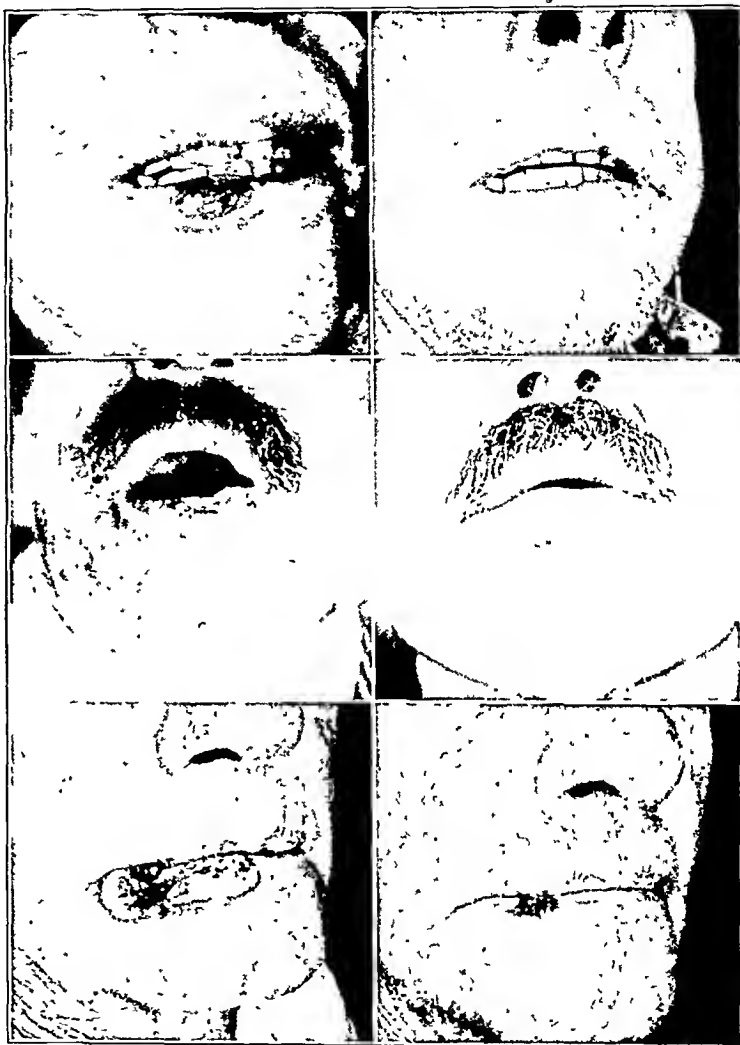


Fig 1—Three patients treated by well filtered radium and roentgen rays. a, patient in group 3 treated by interstitial needles and roentgen rays, with two year survival; b, patient in group 4 treated by external application of radium and roentgen rays, with five year survival; c, patient in group 4 treated by interstitial needles and roentgen rays, with four year survival.

Our patients were studied to determine the type of skin, the incidence of dental caries, the possible influence of their occupations, the kind of smoking (pipe, cigar or cigaret), the involvement of the lymph nodes and finally the evolution of the intensity of treatment with its subsequent results. The youngest patient treated was 20 years old and the oldest 85 (table 1). The average age was 53 years.

Age is a factor in selecting the type of treatment. Radiation sequelae as a contraindication to radiation therapy are negligible. Under less favorable circum-

⁸ Ewing, James. Neoplastic Diseases, ed 4, Philadelphia & London, W. B. Saunders Company, 1940.

stances it is possible to obtain sequelae such as telangiectasia and slight atrophy. We have examined younger patients with tender skins who had been treated twenty years before by beta radiation and unfiltered

containing a skin-colored product. Patients with skin sensitive to actinic rays are advised to wear large hats and to use these creams or lipsticks several times a day. They are advised also to grow a heavy mustache, when possible, to protect the lips from the sun. Sixty patients in our study reported sun or "fever" blisters as initial lesions.

The use of tobacco predisposes to leukoplakia, which leads to leukokeratosis and finally to carcinoma. Sixty-three of our patients were cigaret smokers; 52 used a pipe, and 17, cigars. There were 132 smokers altogether. Thirteen patients reported previous abrasions with the razor, while many had dental caries or irregular or sharp teeth. Those having the worst oral conditions were advised to have oral hygiene and extraction of decayed teeth before high voltage roentgen therapy for metastasis was prescribed, in order to prevent necrosis of bone. Otherwise the mouth was not cleaned up until after the lip had been irradiated and was entirely well. Fifteen patients had been treated previously with pastes and plasters, therapy which, as Broders,⁹ Lain⁶ and others have agreed, lessens the chance of recovery. Eleven had been treated by fulguration (electric needle), 4 with acid, 1 with phenol and 1 with the silver nitrate stick. Six had received small repeated doses of roentgen rays in another clinic.

BIOPSY

There is general agreement among all who treat cancer that biopsy should be done whenever possible,

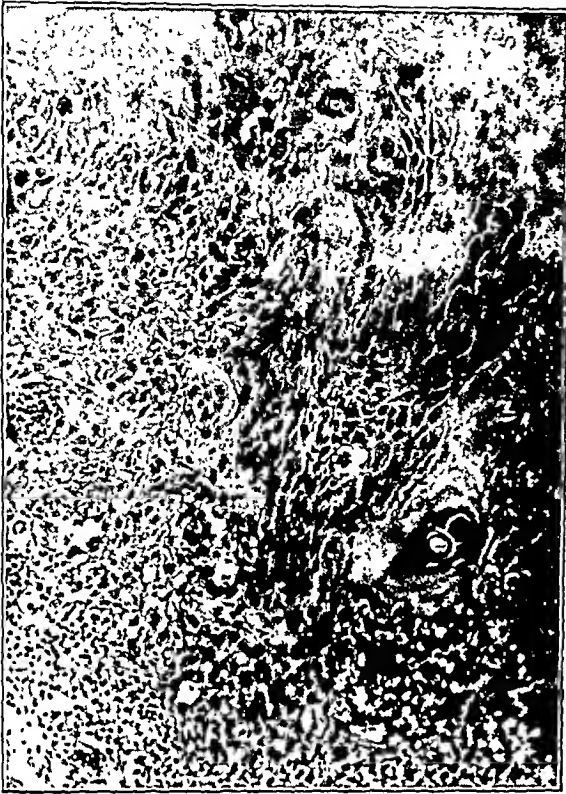


Fig. 2.—An early infiltrating lesion which shows disorganized, fairly anaplastic prickly cells breaking through the basal cell membrane. Inter-cellular edema with loss of prickly cells in some areas may be noted. One well formed epithelial pearl may be seen in the lower portion.

roentgen rays, and most of them still showed soft, pliable scars with excellent cosmetic results (only a few presenting small, telangiectatic areas), thereby demonstrating that the earlier technic produced many good results. Nowadays in younger patients (20 to 35 years old) we confine the treatment to gamma radiation, using interstitial needles or well filtered radium plaques.

PREDISPOSING CAUSES

Fair-skinned persons are particularly susceptible to cancer of the lip. Only 2 in our series were full-blooded Indians, and the growths occurred in the scars of old chronic lupus erythematosus. Only 4 women were found to have cancer of the lower lip. One hundred and four of our patients were farmers, showing again that occupation does play an important part. The chance of acquiring a malignant neoplasm of the lip is in proportion to the extent of exposure to actinic rays. The problem of actinic rays unfavorably affecting areas of radiodermatitis has been overcome largely in radiation treatment by improvements in technic, so that few serious consequences in this respect are now encountered. Sensitive patients must lead a less active life and so are advised to rest during the time of most intense exposure to the sun, to work only early and late in the day and to protect their lips with sunburn creams in which are incorporated bismuth oxylchloride, quinine or tannic acid. One of the agents now being tried for reflecting actinic rays is a proprietary preparation made in the form of a lipstick

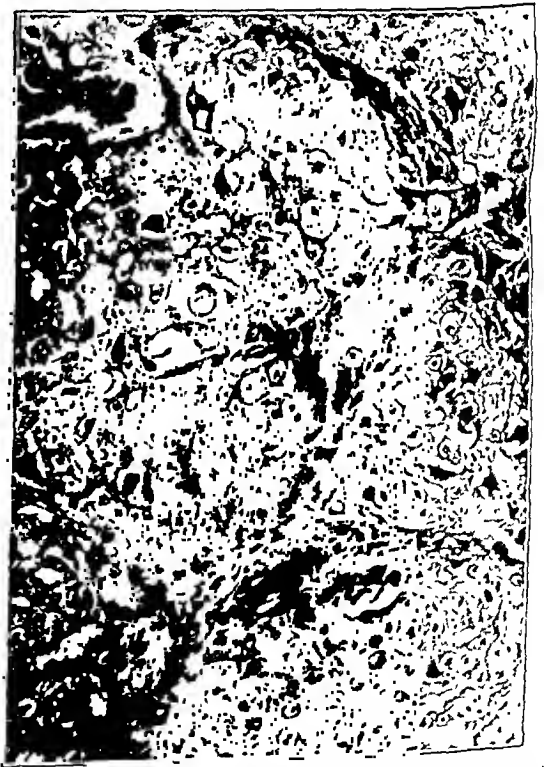


Fig. 3.—A highly undifferentiated tumor; solid cords of anaplastic squamous cells, with large vacuolated cells resulting from dyskeratosis, in some areas of a single cell type.

but it has not been our custom to take specimens for biopsy in all cases as a routine procedure. The largest number of lesions in patients of groups 1 and 2 showed

9. Broders, A. C.: Squamous Cell Epithelioma of the Lip. *J. A. M. A.* 74: 656 (March 6) 1920.

no ulceration, and nonulcerated lesions were the type on which biopsy was not usually performed.

Since we began to use small interstitial needles biopsy has become a much simpler procedure and is performed more often, for in any event the lip must have local anesthesia for the placement of the needles, and a specimen for biopsy can be removed at the same time.

TABLE 1.—Age of Patients

Age	No.
20-30	15
30-40	56
40-45	30
45-50	39
50-55	30
55-60	34
60-65	39
65-70	30
70-75	24
75-80	15
Over 80	6
Total	318

GRADING

The importance of grading tumors according to Broders' classification of adult and embryonal cells is accepted with skepticism by many pathologists, but this method of classification has been a valuable contribution to the study of the pathology of tumors. In his excellent review⁹ of the pathology of cancer of the lip, 62 per cent of the tumors were of grade 2 and 21 per cent were of grade 3.

Mekie¹⁰ expressed the belief that the idea of differentiation of tumors is not the whole story. If the histogenesis of tumors is to be understood, the relationship of the squamous cells to the basal cells must be understood. He considered the basal cells as the important ones, since they alone possess the power of reproduction. The basal cell is the most highly differentiated in squamous epithelium, and the more superficial layers (stratum lucidum and stratum corneum) represent a "degeneration" which culminates in keratinization. He expressed the opinion that the tumor bed and the anaplasia of the basal cells in squamous cell carcinoma are of utmost importance.

Grading is considered to be of prognostic value. Broders found metastasis in 11 per cent of patients with tumors of grade 1 and grade 2, while 66 per cent with tumors of grade 3 or grade 4 had metastasis. But examination of 20 patients with metastasis by Kennedy¹¹ showed 18 with grade 1 and 2 with grade 2 cancers. Thus, in this small group it did not seem that grading played an important part in determining the danger of metastasis.

There are many other factors of equal prognostic value of a clinical nature. The type of tumor bed (MacKee and Cipollaro¹²) is of as great importance to the radiotherapist as the percentage of cells which are adult or embryonal. The gross appearance and clinical course of the tumor also are of much prognostic value.

TISSUE STUDIED

Seventy-one microscopic sections from lesions of the lower lip were studied. Forty-one were from private patients and 30 from outpatients (University Hos-

pitals). Biopsy was done on only a small percentage of the 225 patients in groups 1 and 2. Of the 93 in groups 3 and 4 less than 50 per cent had sections made.

MODES OF USING RADIUM

1. *Application of Radium to the Surface.*—For the application of "cross fire" therapy, no part of the body is more satisfactory than the lip. Radium plaques are used in two forms approximately fitting the lesions. For larger growths, two 10 mg. half strength plaques and one 5 mg. plaque are used in the form of a saddle, the two 10 mg. plaques being placed anteriorly and posteriorly with the 5 mg. applicator on top. Two mm. of lead is used as a filter on all plaques, only the harder gamma rays thus being utilized. An additional distance of 1 to 1.5 cm. from the skin to the plaque is supplied by enclosing gauze between the filter and the nonmetallic rubber. It is left in place a long enough time to give the predetermined dose of 1,400 to 2,500 milligram hours, which is usually three or four days. During use of the saddle applicator, particular attention to the natural fullness and thickness of the lip is important, as the dose varies in proportion to the diameter of the lip.

2. *Use of the Interstitial Needle.*—Our needles vary in size, having an over-all length of 11, 21 or 28 mm. and a wall thickness of 0.5 mm. of platinum. The radium element is distributed so that there is 1 mg. to each centimeter of active length. This is slightly more radium element than there was in the original needles used by Cade,¹³ but this distribution was used since it was found that the radium in a 1 cm. needle centrally placed for seven days would satisfactorily destroy 1 cc. of squamous cell carcinoma. In accordance with the previous work of other radiotherapists,¹⁴ we have employed the following plan of irradiation: The entire tumor is divided into imaginary spheres of 1 cc. each. If the lesion is sufficiently wide, needles are placed in parallel rows, 1 cm. apart, running the length of the lesion. A second or a third plane of needles 1 cm. inferior to the plane first implanted is used if necessitated by the depth of the lesion. Thus at least 168 milligram hours of radium can be administered to each sphere or cubic centimeter of tissue. In order not to undertreat the peripheral cells of a tumor, the outer

TABLE 2.—Duration of Illness

Duration	No.
1 to 6 months	83
6 months to 1 year	55
1 to 1½ years	32
1½ to 2 years	13
2 to 3 years	29
3 to 4 years	10
4 to 5 years	12
5 to 6 years	8
Over 6 years	10
Total	252

needles are placed 0.5 cm. beyond the border of the lesion in apparently normal skin.

Interstitial needles are of particular value in the treatment of recurrences of lesions previously inadequately treated by roentgen rays or by too small external applications of radium. Serious cutaneous reactions

10. Mekie, D. E. C.: Buccal Carcinoma, *Am. J. Cancer* 16: 971-1023 (Sept.) 1932.

11. Kennedy, R. H.: Epithelioma of the Lip, with Particular Reference to Lymph Node Metastases, *Ann. Surg.* 99: 81-93 (Jan.) 1934.

12. MacKee, G. M., and Cipollaro, A. C.: Cutaneous Cancer and Precancer, New York, American Journal of Cancer, 1937.

13. Cade, Stanford: Radium Treatment of Cancer, London, J. & A. Churchill, 1929.

14. Shelmire, J. B., and Fox, E. C.: Small Radium Needles in the Treatment of Malignant Cutaneous Tumors, *Arch. Dermat. & Syph.* 3-4: 862-872 (Nov.) 1936. Martin, C. L.: Small Radium Needles versus Radon Implants, *Am. J. Roentgenol.* 27: 240-248 (Feb.) 1932.

have been avoided by implanting the needles as deeply as possible while yet approximating the lower border of the lesions. Such placement allows the major effect of radiation to be utilized at a proper depth, whereas the amount of radiation affecting the skin will be small proportionately. We get better cosmetic results

TABLE 3.—Site of Cancer

Site	No.
Left side of lower lip.....	154
Center of lower lip.....	66
Right side of lower lip.....	93
Total	313

TABLE 4.—Previous Treatment

Type of Treatment	No.
Plaster	15
Electric needle	11
Acid	4
Phenol	1
Silver nitrate	1
Roentgen rays elsewhere	6
Total	38

in utilizing the same principle by interstitial irradiation, avoiding telangiectasia, pigmentary changes and atrophy. The ganuna rays from this small concentration of radium over a more prolonged time seem to fulfil Regaud's¹⁵ concept of bombarding the cells during the stage of mitosis. Interstitial irradiation has been used in our series for six years. Fifty-two patients were treated by this method, and for only 1 was failure to cure the primary lesion recorded. This patient had been treated previously several times by external application of small, inadequate doses of radium. Interstitial irradiation does not require hospitalization, though the area under treatment is dressed daily with a bland ointment. If the lesion is secondarily infected, filtered roentgen ray treatment is given for several days preceding the placement of the needles, and moist dressings of boric acid or sulfanilamide and glycerin are used.

In our series there have been no cases of lymphangitis or local suppuration in the lip resulting from the interstitial implantation of radium. Patients have but little discomfort, and the procedure saves valuable time formerly lost each day in removing the surface applicator for shaving and eating.

TREATMENT OF GROUP 1

Group 1 consisted of patients whose lesions were localized, indurated and not more than 1.5 cm. in diameter. 1. If the lesion is a papillary outgrowth, superficial in type, 1 cm. or less in diameter and not over 1 to 3 mm. in thickness, unfiltered roentgen rays are used, with a force of 100 kilovolts and an intensity of 3 milliamperes, in 3 to 5 skin erythema doses (800 to 1,200 r). The surrounding normal tissue is shielded within 2 to 3 mm. of the growth. In addition, surface applications of gamma radiation by means of needles or plaques are made, with a 10 mg. half strength plaque with 2 mm. of lead screening, or its equivalent, at a distance of 1 cm. for 480 milligram hours.

2. If the lesion is of the deeper, more infiltrative type, 15 mm. in diameter and 3 to 6 mm. thick, the roentgen rays are filtered through 1 to 2 mm. of aluminum, in

doses of 800 to 1,000 r, in divided doses of 300 r every other day. In addition, two small 0.6 or 1.5 mg. interstitial needles are placed parallel to each other, 1 cm. apart, on each side of the lesion, for a total of one hundred and sixty-eight hours.

TREATMENT OF GROUP 2

The primary lesions in patients of this group are treated in much the same manner as the more infiltrated type in group 1. Palpable glands are not irradiated at the same time unless the nodes are large, hard, firm and clinically metastatic.

TREATMENT OF GROUPS 3 AND 4

In patients of groups 3 and 4 lesions from 1.5 to 3 cm. in extent are treated with interstitial needles and filtered roentgen rays in much the same manner as in groups 1 and 2. Growths larger than 3 cm., if fungating in type and infected, receive preliminary irradiation with filtered roentgen rays, 400 to 600 r daily, the factors employed being those previously mentioned, on successive days for four or five days before the implantation of the needles. The results of treatment of these larger lesions have been highly successful. Because there is a broader area treated by radiation, some degree of telangiectasia and scarring is noticeable in patients with thin, fair skin. However, the reaction induced by this method does not cause such atrophy as follows unfiltered beta radiation used in repeated doses (such as dryness, telangiectasia and ulceration). Even though such sequelae are in evidence, the lips are still moist and have a fairly normal texture, but protection from sunlight and abstinence from smoking should be maintained rigidly.

PALPABLE NODES

The total number of patients with palpable nodes was much smaller than the number of those whose nodes

TABLE 5.—Carcinogenic Factors in Previous History

Factor	No.
Use of cigarettes	63
Use of pipe	52
Use of cigars	17
Cut with razor	13
Total	145
"Fever" and sun blisters.....	53

TABLE 6.—Year of Treatment

Year	No.	Year	No.
1921.....	1	1931.....	14
1922.....	2	1932.....	20
1923.....	3	1933.....	22
1924.....	10	1934.....	10
1925.....	12	1935.....	11
1926.....	11	1936.....	24
1927.....	23	1937.....	24
1928.....	21	1938.....	26
1929.....	29	1939.....	20
1930.....	23	1940.....	12
Total	318		

were not palpable (table 9), being 48 for group 2 and 47 for group 4. Eight in whom metastatic lesions developed were not originally in group 2 or group 4. Many times when the lesions are infected on the surface swelling of the nodes is merely an inflammatory response to a long-standing infection. In the treatment of such lesions we do not feel that high voltage roentgen rays in small doses given routinely as a prophylactic

15. Regaud, C.: On Curitherapy of Epitheliomas of the Tongue and of Their Following Adenopathy, Brit. J. Radiol. 30: 361-367 (Oct.) 1925.

measure are of any value, but for glands thought to be the site of metastasis a full, adequate dose is recommended.

Since the swelling of nodes often proves to be of inflammatory origin, the routine practice of giving high voltage roentgen rays to the gland-bearing areas of

affected by metastasis were treated by block dissection; 1 had a four year cure; the other remains well after nine months.

REGRESSION OF THE PRIMARY LESION

We have not failed to cure the primary lesion in every case in which treatment has been with interstitial needles or there has been adequate radium therapy, as described, if the lesion has not been treated previously by inadequate doses of radiation. There was a total of 83 patients living and free from evidence of cancer for ten years or more and 73 for five years or more. The total treated to 1936 was 216, with 156 well at least five years, making the five year survival rate 72.2 per cent. A survey of 22 patients who died from cancer showed that more than 50 per cent were in group 4, 11 being smokers and 8 using a pipe. Two previously had been treated with escharotics (solution of potassium arsenite and nitric acid) and 1 with a hot canterly.

SYPHILIS

Association of syphilis with cancer of the lower lip has been small in our study, but results of irradiation have been equally good despite the syphilitic history. Treatment of the syphilitic infection was continued with smaller doses of arsenicals and larger amounts of the heavy metals.

COMMENT

The study of a series of 318 cases of cancer of the lip should permit drawing of certain profitable conclusions: The time we began radiation treatment falls into three definite periods in respect to the type of filtration and the amount of the dose: (1) an early period—1924 to 1932; (2) a middle period—1932 to 1935, and (3) a late period—1935 to 1941.

Early Period—1924 to 1932.—During this time we used unfiltered roentgen rays and inadequate aluminum and brass-filtered radium, thereby using mostly beta radiation. The dose was small and was repeated four or five times at intervals of six to eight weeks. The results of this treatment were satisfactory in many instances, but it was noted that doses were applied at six week intervals, sometimes over nine months' time, and that some lesions finally had to be destroyed by cautery or electrosurgical methods. The cosmetic

TABLE 8—Comparison of Newer Technique with Older Technique with Regard to Five Year Survival Rate

Result	Early Period (Inadequately Filtered Radiation) Number	Later Period (Well Filtered Radiation) Number
Death from cancer or incurable metastases	14	3
Death from other cause, patient well at least 1 year when last seen.	21	4
2 to 3 year cure	18	51
5 year cure	105	58
Total	158	88
Percentage of 5 year cures	66.0	88.0
Total 5 year survival rate, 72.2%		

results were excellent on the whole, but in patients who had repeated doses of unfiltered radiation, some telangiectasia and radiodermatitis resulted. The large lesions (in patients of groups 3 and 4) were seldom entirely cured by irradiation but had to be destroyed by other methods. A total of 158 patients (table 8) were treated in the early period, with 14 deaths due to the metastasis of cancer. Twenty-one had been well for at least a year when last seen or had died from other

TABLE 7.—Distribution of Survival Periods

	No.		No.
5 year survivals in group 1..	105	Ten year survival or more	83
5 year survivals in group 2..	17	Five year survival or more	73
5 year survivals in group 3..	19		
5 year survivals in group 4..	15	Total	156
Total	156		
1 to 5 year survival *			71
1 to 5 year survival †			25
Lip well when last seen, but patient was lost track of before 1 year			30
Lip well, but patient died from causes other than cancer			14
Total			296

* We are still in contact with the patients

† We have lost contact with the patients

all patients with cancer of the lip certainly is not warranted, but patients must be selected by expert clinical judgment for the trying ordeal of heavy roentgen irradiation of the neck. No entirely satisfactory plan for dealing with metastases to the cervical nodes has yet been devised. It is felt that both surgical intervention and irradiation must be resorted to, the method that is most suitable being selected for each patient. In our series, only 27 were treated by protracted, well filtered roentgen rays to the areas of lymphatic drainage.

BLOCK DISSECTION

We feel that block dissection should not be recommended in every case of cancer of the lip but should be recommended only in selected cases. It is contraindicated, according to Duffy,¹⁶ if the primary lesion is uncontrolled, if the capsule of the node is infiltrated by carcinoma, if cross or bilateral cervical metastases are present, if distant metastases can be demonstrated or if the patient is in poor general condition.

One patient with a four year cure in our series had block dissection of a large solitary node and is now in fine general condition. Edwards¹⁷ has had encouraging results from combining radon implants in the nodes with high voltage roentgen rays. Martin⁴ has combined long needles containing a weak radium element with high voltage roentgen rays.

RESULTS OF TREATMENT

The results listed in tables 7, 8 and 9 show a high percentage of cures. This is largely because 70 per cent of the lesions seen in our clinic are 1.5 cm. or smaller in diameter, and our patients for radiation treatment are selected as carefully as those reported on by surgical groups. Patients with hopeless, advanced cancer with large, fungating growths involving the entire lip and those already showing large suppurative nodes are not given treatment with radium. If any radiation is given to such patients, it is only by heavily filtered roentgen rays, with 140 kilovolts and a filter of 6 mm. of aluminum or 170 to 200 kilovolts and copper and aluminum filters (patients so treated not included in this series). Two patients each with a single gland

16 Duffy, J. J. Conservative Procedure in Case of Cervical Lymph Nodes in Intraoral Carcinoma, *Am. J. Roentgenol* 29: 241 247 (Feb) 1933.

17 Edwards, H. G. T. Metastatic Cancer in Lymph Nodes of Neck, *South M. J.* 32: 905 911 (Sept) 1930

causes. Eighteen were in the groups with two to three year cures before they were lost track of. One hundred and five had survived for five years or more with no metastasis, contact with us being maintained during this period. The rate of five year cures for the early period was 66 per cent.

Middle Period—1932 to 1935.—This was an era in which more filtration was applied to the radium, with an increase in the length of time of treatment. One continuous well filtered application was found to be all that was necessary to produce a cure of the primary lesion. This technic, as previously described, employed the "housetop" or the "saddle" applicator in connection with roentgen therapy. The results were excellent, and the large lesions of patients in groups 2 and 4 were cured. Thus we entered into a period in which the primary lesion was almost 100 per cent curable by irradiation alone.

Late Period—1935 to 1941.—This was a continuation of the period in which the larger dose of well filtered radium was employed, but with more use of interstitial irradiation. Since the interstitial irradiation is distributed only to the labial lesion and 1 to 2 cm. of surrounding tissue, the tongue and other contiguous structures did not receive the pronounced secondary

a half after the cure of the primary lesion, and after this period contact is maintained by correspondence. The patients are also requested to make a yearly visit during the rest of their lives.

CONCLUSION

1. Three hundred and eighteen patients with cancer of the lower lip were treated by roentgen rays and radium. Twenty-two have died or now have incurable metastases (7 per cent). There was a 72.2 per cent five year survival rate.

2. Protracted radium therapy with the element well filtered has produced a higher percentage of cures than did the older technic, which employed weaker doses at short intervals.

3. Results obtained by interstitial radiation therapy in a restricted number of patients surviving five years or more revealed 95 per cent evidence of cure of the primary lesion. In a much larger number of cases of less than five years' standing, there is every indication of an equally good outcome.

117 North Broadway.

ABSTRACT OF DISCUSSION

DR. JAMES R. DRIVER, Cleveland: This paper represents a large series of cases treated over a long period. The five year results in the period from 1932 to 1941 showed 88 per cent cures as compared to 65 per cent cures in the early period, when unfiltered radiation and infrequent treatments and other forms of therapy were given. This proves the superiority of modern technics of using radiation therapy. Hardly any two workers employ identical technics in giving radiation treatment. But the use of fractional roentgen ray doses according to the Coutard principle is used by the great majority of radiologists and dermatologists today. Its superiority over older methods of using roentgen rays has been unquestionably established. The authors' experience with interstitial irradiation by the use of low intensity heavily filtered radium needles showing 95 per cent five year cures is gratifying. My associates and I have been using this form of radium therapy for over ten years and in the treatment of cancer of the lip the results have been better than by any other form of treatment. It is especially indicated in the more extensive infiltrating type of lesion. The cosmetic results are excellent and late irradiation changes are less than when roentgen rays are used. We seldom use a combination of radium and roentgen rays in the treatment of lip cancer as used by the authors. The method perhaps has the advantage of being able to administer the total combined dose in a shorter period of time. A total dose of from 4,000 to 6,000 roentgens, depending on the character of the lesion, is of chief importance and it makes little difference whether it is given by the use of radium or by the use of roentgen rays as long as it is administered according to the principle of frequent divided doses of roentgen rays or by continuous interstitial irradiation over a period of a week to ten days by the low intensity radium needles. I agree with the authors that the question of voltage and filtration depends on the size and the degree of infiltration of the lesion. As was pointed out, cancer of the lip metastasizes comparatively late in the majority of cases. Nevertheless it is in these cases that the failures occur. We believe, as the authors do, that expert surgery and radiation are indicated in all operable cases.

DR. JOHN W. SPELLMAN, Brookline, Mass.: I wish to emphasize the treatment of the regional lymph nodes rather than the control of the local disease. It is clear that no matter how effectively the disease of the lip is destroyed it will be futile if the patient succumbs later to metastatic involvement of the glands of the neck. In 1939 Taylor and Nathanson analyzed 616 cases of cancer of the lip collected from three Massachusetts hospitals with a view to determining the best method of handling the problem of the treatment of the regional lymph nodes. The pathologist found microscopic disease in 20 per cent of the cases in which no lymph nodes could be felt before operation. This fact shows conclusively

TABLE 9.—*Classification According to Extent of Disease of Patients with at Least One Year Survival*

	Recovered		Lost Track of	Died from Cancer or Incurable Metastases		Total
	No.	Pct.		No.	Pct.	
Group 1						
Lesion 1.5 cm. or less, local.....	149	84	23	5	3	177
Group 2						
Lesion 1.5 cm., with nodes.....	43	89	3	2	5	48
Group 3						
Lesion larger than 1.5 cm., local..	39	87	3	4	9	46
Group 4						
Lesion larger than 1.5 cm., with nodes	35	74	1	11	24	47
Totals	266	83	30	22	7	318
Patients with no palpable nodes....	188	84	26	9	4	223
Patients with palpable nodes.....	78	82	4	13	15	95
Totals	266	83	30	22	7	318

irradiation which was a drawback in the use of the "housetop" or the "saddle" applicator. In the two later periods a total of 160 patients were treated, with only 8 deaths definitely attributed to cancer at the time these statistics were compiled. Of 58 treated before 1936, 2 died from other causes before five years had elapsed, 2 were not located and 3 died of metastasis of the cancer. Fifty-one patients were living after five years, making the five year survival rate for the late period 88 per cent. One noteworthy observation has been made regarding the late period. There was a definite decrease in the size of the lesions, more of them being classified in group 1. This we feel has been due to two things: (1) the early decision to have the lesion removed, influenced by simplicity of radiation treatment without hospitalization, and (2) education concerning cancer among the laity and members of the medical profession, which has increased the chances of early diagnosis and made prompter treatment possible.

FOLLOW-UP STUDIES

The importance of a regular follow-up in cases of cancer of the lip cannot be stressed too much. All our patients are made to understand that the treatment includes observation every two months for a year and

that, if block dissection of the neck is not carried out as part of the original plan of treatment, the follow-up of this group should be careful and frequent during the first three years at least following whatever kind of local treatment is used. In the light of our present knowledge, it seems that certain general rules may be formulated to guide us in advising the safest procedure in the matter of the treatment of the cervical lymph nodes: 1. Prophylactic irradiation of the neck is never warranted, since if the glands are not involved intensive irradiation is unnecessary and even harmful, while if the glands are involved we do not believe that at present it is possible to "cure" cancer in lymph nodes by high voltage roentgen therapy. Irradiation of the neck is of course a useful palliative treatment when inoperable metastatic disease is present. 2. Routine prophylactic neck dissection is not necessary or advisable in cases in which there is a small primary lesion of low malignancy and with small or palpable lymph nodes. A close follow-up should be maintained, however, for at least three years, because a definite, if small, percentage of this group will develop cervical node involvement. If delayed neck dissection is carried out promptly after suspicion of metastasis is present, cures can still be obtained in approximately 60 per cent of these cases. 3. In cases of cancer of the lip in which regional lymph nodes measuring over 1 cm. are present after the wound has healed or the irradiation reaction has subsided, the usual suprahyoid block dissection should be carried out on the side of the lesion or on both sides if the cancer is close to the midline of the lip. In a series of neck dissections in which the nodes measured 1 cm. or more, actual involvement was found in over 60 per cent.

DR. H. J. TEMPLETON, Oakland, Calif.: There always has been argument between the dermatologist, the surgeon and the radiologist as to the best treatment of cancer of the lip, and I think that it can be partially settled by saying that a certain treatment is best in the hands of that particular individual who is most familiar with it. I have favored the use of destructive methods of treatment such as surgical excision, electrocoagulation, electrosurgery or the use of the actual cautery over radiation, although I use radiation a great deal. In 1939 I began an analysis of the cases seen in my private practice over exactly the same period as those of Drs. Lamb and Eastland, 1925 to 1939. I did not include cases seen in clinic practice. My partners and I saw a total of 113 patients with epithelioma of the lower lip. Of these 110 were men and 3 were women. Our policy in regard to biopsies has been to omit them if the lesion is typically epitheliomatous in appearance. All of our patients were seen by three dermatologists and if there was any disagreement as to the clinical diagnosis a biopsy was done; but of 52 biopsies from 102 patients 49 showed squamous cell epithelioma and 3 basal cell epithelioma. Of the 113 patients, 102 were treated by us. Earlier in our experience we treated our patients by means of extensive electrocoagulation or electrodesiccation and followed this with from 3,000 to 5,000 roentgens of unfiltered roentgen x-rays. More recently we have been inclined to omit the irradiation as we have found that our results are just as good without it. Ten of the patients whom we treated were lost track of or died from other causes and are not included in our statistics. Of the 92 whom we could follow, 88 are classified as cured for periods varying from two to five years. One patient had a recurrence after our treatment with radium but electrodesiccation was then done and the patient was known to be well three years later. One patient who had a recurrence was treated elsewhere and recovered. One patient who had a recurrence was lost track of and hence the case has to be regarded as a failure. One patient died. Out of a total of 92 patients we have 89 who are known to have recovered and remained well from two to five years. I feel that the differential diagnosis and treatment of these purely ectodermal lesions belongs particularly in the field of dermatology.

DR. JOHN H. LAMB, Oklahoma City: Dr. Driver's technic somewhat parallels ours except that he uses radium alone with equally good results. Dr. Spellman has given an excellent review of the more conservative ideas of the surgical treat-

ment, particularly with reference to routine block dissections in lip cancer. We have attempted in this review to show our end results of several years' experience in the treatment of lip cancer. There is no desire on our part to discredit other methods of treatment. In fact, we did not use radiation always alone; sometimes we use electrocoagulation and desiccation if it fails. I think Dr. Templeton's results are excellent. We feel that cancer of the lower lip is not the great problem, as it has been thought by many with the routine block sections and routine high voltage roentgen therapy to the gland bearing areas but we feel it is a disease that is amenable to certain simple forms of treatment in as high as 90 per cent of the cases.

Clinical Notes, Suggestions and New Instruments

DEVELOPMENT OF ACUTE EXFOLIATIVE DERMATITIS DURING ADMINISTRATION OF SULFATHIAZOLE

MARY WEINSTEIN, M.D., AND ALBERT H. DOMM, M.D.
PHILADELPHIA

The cutaneous manifestations of sulfathiazole intoxication have been recently described by Volini, Levitt and O'Neil.¹ They reported an incidence of 3.9 per cent in a group of 180 cases. Urticarial, erythematous, macular, papular, nodular and purpuric eruptions were encountered; the nodular lesion probably represented the advanced stage of a toxic rash and has been the most serious lesion, having been associated with a fatal outcome in a high percentage of cases.

Among 400 pneumonia patients treated with sulfathiazole reported from the Philadelphia General Hospital² the incidence of cutaneous rashes was 3.7 per cent. There were no cases of acute exfoliative dermatitis observed and to our knowledge there are no reports in the literature of this condition. It seems worth while that the following case be reported.

REPORT OF CASE

History.—R. A., a Negro aged 38, admitted March 17, 1941 to the Philadelphia General Hospital in the medical service of Dr. Edward Torrance, complained of fever and pain in the chest. For two weeks prior to admission he had a mild infection of the upper respiratory tract with weakness and malaise. On the day of admission a sharp, shooting pain in the right lower part of the chest, shortness of breath and a nonproductive cough suddenly developed. His past history was important in that he had a severe cutaneous rash about twelve years before during treatment for "bad blood," and following this attack he received no more "shots in the arm." The patient was well developed and well nourished, moderately dyspneic and acutely ill. The temperature was 101 F., the pulse rate 110, the respiratory rate 25 and the blood pressure 136 mm. of mercury systolic and 96 mm. diastolic. There was evidence of early consolidation of the right lower lobe. This was confirmed by roentgen studies on March 18. No other significant physical changes were noted.

Laboratory Examination.—A blood count revealed red cells 5,250,000 and white cells 16,900 with polymorphonuclear neutrophils 78 per cent, lymphocytes 21 per cent and monocytes 1 per

Dr. Domm is David Riesman Fellow in Medicine.

Aided by a grant from the American Philosophical Society.

From the Committee for the Study of Pneumonia Control, Philadelphia General Hospital.

Dr. Fred D. Weidman gave the description and made the interpretation of the pathologic changes in the skin. Dr. Harrison F. Flippin helped the author in the preparation of this report.

1. Volini, I. F.; Levitt, R. O., and O'Neil, H. B.: Cutaneous and Conjunctival Manifestations of Sulfathiazole Intoxication, *J. A. M. A.* **116**: 938 (March 8) 1941.

2. Flippin, H. F.; Reinhold, J. G., and Schwartz, Leon: Sulfapyridine and Sulfathiazole Therapy in Pneumococcal Pneumonia, *J. A. M. A.* **116**: 683 (Feb. 22) 1941. Schwartz, Leon, and Flippin, H. F.: Sulfathiazole in the Treatment of Pneumonia, *Pennsylvania M. J.* **44**: 446 (Jan.) 1941. Flippin, H. F.; Rose, S. B.; Schwartz, Leon, and Domm, A. H.: Sulfadiazine and Sulfathiazole in the Treatment of Pneumonia, *Am. J. M. Sc.* **201**: 585 (April) 1941.

cent. The Kahn precipitation reaction was negative. The blood urea nitrogen was 17 mg. per hundred cubic centimeters; blood sugar was 120 mg. A blood culture taken on admission was negative.

The urine had a specific gravity of 1.030; it was negative for albumin and for sugar and microscopic examination of the sediment was negative. Neufeld examination of the sputum failed to yield a type with antipneumococcal serum types I to XXXIII. Culture of the sputum contained pneumococci and *Streptococcus viridans*.

Course.—Between 10:30 a. m. March 19 and 6:30 a. m. March 21, the patient received a total of 15 Gm. of sulfathiazole³ with equal amounts of sodium bicarbonate. On the morning of March 21 the temperature rose to 103 F.; the patient appeared more toxic and a diffuse macular rash was noted involving the neck, chest and arms. The diagnosis of drug rash was considered and treatment with sulfathiazole was ordered discontinued, although the patient did receive four



Eruption as it appeared twenty-four hours after onset. Courtesy of Dr. Leroy Latowsky.

additional 1 Gm. doses of the drug owing to an oversight in night orders. Within twenty-four hours the cutaneous lesions became vesicular, with exfoliation, and involved practically the entire surface of the body as shown in the illustration. There were no subjective symptoms except slight itching of the skin during the night.

The patient was seen on March 22 by Dr. Patricia Drant of the dermatology department, and a diagnosis of dermatitis medicamentosa due to sulfathiazole was considered most likely.

From March 21 to the time of his death on March 26, the patient's cutaneous lesions became progressively worse and were accompanied by a sustained fever of from 103 to 104 F. Examination of the blood on March 25 showed 3,500,000 red cells and 20,000 white cells with 68 per cent polymorphonuclear cells with a decided shift to the left, 28 per cent lymphocytes and 4 per cent monocytes. Determination of sulfathiazole in the blood at this time showed no trace of the drug.

In addition to specific treatment with sulfathiazole, the patient received, before the cutaneous lesions developed, phenobarbital

$\frac{1}{2}$ grain (0.1 Gm.) on three occasions, codeine sulfate $\frac{1}{4}$ grain (0.03 Gm.) for four doses, morphine sulfate $\frac{1}{4}$ grain (0.015 Gm.) by hypodermic injection twice and six doses of divir of terpin hydrate 1 fluidrachm (4 cc.). An ointment containing zinc oxide and boric acid was applied locally to the skin after the rash appeared.

*Autopsy.*⁴—At autopsy almost the entire cutaneous surface of the body was affected with the exception of the hands, forearms, feet and legs. Practically the entire back was denuded. The epidermis was exfoliated, leaving a brilliant red, shiny surface. This occurred in great patches, more or less extensive islands of persisting epidermis being interspersed. Nikolsky's sign was present on regions of involvement but not on the forearm, hands, feet and legs. There were no definite blebs; it appeared that the epidermis had simply been loosened from the corium.

On microscopic section the skin presented four important pathologic changes: First, there was a cleavage separation of the epidermis, unaccompanied by any frank inflammatory reaction. Reasonably, the exfoliation was a result of an accumulation of edematous fluid at the region of the basement membrane. The adjoining epidermal cells exhibited but a minor grade of edema, and it was not extreme in the corium immediately below. The epidermal cells in the prickly layer were by no means hyperplastic and the metabolism of melanin seemed to have been abrogated. Second, in connection with this edema the basal cells had undergone a peculiar inflammatory metaplasia and hyperplasia. Third, the linings of the blood vessels showed definite hyperplasia and swelling of the lining endothelium. This, occurring uniformly and diffusely throughout the entire section, speaks for a hematogenous route for the etiologic agent. Fourth, the skeletal muscle fibers at the bottom of the section were swollen and had proliferative nuclei; the transverse striations had disappeared and the fibers were not completely hyalinized. This, likewise, speaks for a general constitutional factor, whether it is the antecedent pneumonia or the sulfathiazole.

The left lung weighed 510 Gm., the right lung 750 Gm. These organs were somewhat firmer than usual in the dependent portions but no areas of consolidation were found. When the tissue was compressed a small amount of yellow gray purulent material escaped from focal points on the cut surface. Microscopic section presented only emphysema, edema and chronic passive hyperemia. The heart was dilated and hypertrophied (weight 460 Gm.) and showed a mild degree of myocardial softening and coronary sclerosis. The kidneys, liver and spleen revealed no significant changes.

COMMENT

An acute exfoliative dermatitis developed in a patient suffering from an atypical pneumonia after receiving 15 Gm sulfathiazole and he died. The abrupt onset of cutaneous involvement, increasing fever and progressive toxicity during sulfathiazole therapy for pneumonia together with the finding at postmortem of the unusual dermatologic process suggests that this case represents an instance of acute exfoliative dermatitis due to sulfathiazole. Other than an overwhelming toxemia resulting from the widespread and severe involvement of the skin, no satisfactory cause of death was found. Neither clinically nor microscopically did this dermatologic process resemble anything with which we are familiar except Ritter's disease. This, which is also known as dermatitis exfoliativa neonatorum, concerns infants exclusively and usually involves the face and there are not the degenerative changes in the capillaries which were exhibited in this case. It is of significance that this patient experienced a cutaneous rash in 1929 following intravenous therapy, presumably from arsphenamine, for "bad blood."

Certainly the potential danger of sulfathiazole dermatitis should be kept in mind with the first appearance of cutaneous lesions. Withdrawal of the drug and forcing of fluids at the earliest sign of cutaneous manifestations constitute the safest procedures, although, as demonstrated in this case, the outcome may still be fatal.

3. The sulfathiazole used in this hospital was free of phenobarbital contamination.

4. The autopsy was performed by Dr. Earl Keller.

COLLAPSE FOLLOWING PARENTERAL ADMINISTRATION
OF SOLUTION OF THIAMINE HYDROCHLORIDE

LEON SCHIFF, M.D., CINCINNATI

The following experience is being reported because, as far as I am aware, a similar case has not been recorded and because it deals with a therapeutic substance which is frequently used at present.

A school teacher aged 45 had been suffering with a mild form of Raynaud's disease since 1932 and with a progressive hypertrophic arthritis of the lumbar spine and sacro-iliac regions since 1933. In April 1940 she had a severe attack of right-sided sciatica for which, among other measures, injections of thiamine hydrochloride were started. A total of thirty-six intramuscular injections of 25 mg. was given between April 16 and July 10, with two different commercial preparations. She vomited twenty minutes and one hour after her eighteenth injection on May 21, 1940.

No more thiamine hydrochloride was given until August 6, at which time the first preparation used was resumed. By August 16 she had received six injections with either nausea or vomiting following four of them. Administration of a third preparation was begun August 24 and continued to September 7, for a total of five injections. This preparation was resumed October 7, and ten injections were given up to December 20.

On December 28, about one or two minutes after receiving her injection of thiamine hydrochloride into the buttocks (from a 5 cc. vial from which she had had six previous injections), the patient became nauseated and vomited. A thin, colorless fluid issued from her nose; she voided involuntarily and collapsed. Her skin was covered with a cold perspiration. She was pulseless and had ceased breathing, and her heart sounds were inaudible. She was placed on a table in shock position and surrounded with covers. Artificial respiration was started, and 1 cc. of solution of epinephrine hydrochloride was injected intravenously. She was also given 1 cc. of epinephrine subcutaneously and $7\frac{1}{2}$ grains (0.5 Gm.) of caffeine with sodium benzoate intramuscularly. Her blood pressure could not be obtained at first. About half an hour later her pulse was palpable and her blood pressure was 110 systolic and 70 diastolic. On being questioned following her recovery, she stated that she had had short bouts of sneezing a short time after the last three or four injections of the thiamine hydrochloride.

On Jan. 2, 1941, an intradermal scratch test done with two of the commercial preparations resulted in a definite white wheal surrounded by an area of hyperemia which itched and reached its maximum in from fifteen to twenty minutes, at which time slight nausea and coughing occurred. On January 25, scratch tests done with 0.5 per cent solution of chlorobutanol, used as a preservative in the first preparation, and with a solution of hydroxyquinoline sulfate, which was used as a preservative in the last preparation, were negative. A similar test done with an aqueous solution of thiamine hydrochloride was positive. There was a white wheal 1 cm. in diameter surrounded by an area of erythema about 3 cm. in diameter, reaching a maximum size in twenty minutes. The intradermal test repeated on February 1 with an aqueous solution of thiamine hydrochloride was again positive. A passive transfer test performed by Dr. Albert Zoss on February 27 was negative.

This experience strongly suggests that the shock suffered by the patient may have been due to sensitivity to solution of thiamine hydrochloride. In view of the rapidity with which the reaction occurred, it is assumed that some of the thiamine hydrochloride must have been administered intravenously on the occasion of the last injection.

Special Article

GLANDULAR PHYSIOLOGY AND
THERAPY

ACTIVATED STEROLS IN THE TREAT-
MENT OF PARATHYROID
INSUFFICIENCY

A REVIEW

FRANKLIN C. McLEAN, Ph.D., M.D.
CHICAGO

This special article is published under the auspices of the Council on Pharmacy and Chemistry. It is one of a series which will be published in book form as the second edition of Glandular Physiology and Therapy. The opinions expressed in this article are those of the author and do not necessarily represent the views of the Council.—Ed.

It is now well established that certain products derived from activated ergosterol are highly effective in increasing the concentration of calcium in the blood and in relieving the symptoms of parathyroid insufficiency. It appears, from some years of accumulated clinical experience, that these products may be administered over a considerable time with reasonable safety, provided proper precautions are observed, and that their prolonged use is attended neither by injury to the patient nor by the development of tolerance.

The subject of the management of hypoparathyroidism with the activated sterols assumes especial importance because of the fact that substitution therapy, in the form of administration of solution of parathyroid, is virtually limited to rather acute conditions, in which the treatment needs to be continued for days or weeks rather than months.¹ Not only is no tolerance to the activated sterols developed but they also have the decided advantage that the preferable method of administration is by mouth. On the other hand, the action of the sterols is somewhat delayed, so that for the relief of acute parathyroid tetany solution of parathyroid may be indispensable.

Reviews of the use and limitations of solution of parathyroid are available.² This review presents the principles underlying the use of the activated sterols in the treatment of parathyroid insufficiency, current knowledge concerning the mode of their action, a consideration of their toxicity and a brief summary of clinical experience with the preparations at present available for this purpose. Because of the unwarranted implication in the current literature that the beneficial effects of one of the derivatives of irradiated ergosterol (dihydrotachysterol) in hypoparathyroidism are specific for that substance, it will be necessary to emphasize the evidence to the contrary. The conclusion is reached that similar, if not identical, effects may be obtained from several of the activation products of ergosterol and cholesterol and that there is no satisfactory evidence that the therapeutic effects of dihydrotachysterol are superior to those of vitamin D when the latter is given in comparable doses. This review does not consider the use of vitamin D products for purposes other than to regulate the concentration of calcium in the plasma.

From the Department of Physiology, University of Chicago.

1. Aub, J. C.: Parathyroid Hormone Therapy, in *Glandular Physiology and Therapy*, Chicago, American Medical Association, 1935, pp. 379-385; J. A. M. A. 105: 197-199 (July 20) 1935.

2. Shelling, D. H.: *The Parathyroids in Health and in Disease*, St. Louis, C. V. Mosby Co., 1935. Aub.³

From the Department of Internal Medicine, University of Cincinnati College of Medicine, and the Cincinnati General Hospital.

CHEMISTRY AND PREPARATIONS

The distinction between the antirachitic action of the irradiation products of ergosterol and those actions which are responsible for the toxicity of certain of these products was first clearly drawn by Holtz and Schreiber³ in 1930. They were unable to make a preparation which was antirachitic but nontoxic but by appropriate chemical treatment could destroy most of the antirachitic action while retaining and actually increasing the toxic effects. As a reference to the dominating symptoms of the toxic actions of irradiated ergosterol—hypercalcemia and pathologic calcification in the soft tissues—they named the principle responsible for these effects the calcinosefaktor. Holtz and his co-workers were then responsible for the further study of this factor, here called the "calcemic principle," and eventually⁴ for its introduction into clinical use in the form of dihydrotachysterol, originally known and frequently referred to in the literature as A. T. 10 (antitetanic preparation 10).

TABLE 1.—Vitamin D Activity and Toxic Borderline Doses of Various Derivatives of Irradiated Sterols

	Vitamin D Activity, I. U. per Mg.	Toxic Borderline Dose,* Mg.
Calciferol.....	40,000	0.05-0.07-0.125 (Morris and McLean, ³⁷ Holtz, Gürsching and Kraut, ⁴⁰ Shohl and Farber ⁴⁴)
Dihydrotachysterol		
Crystalline, pure.....	200 ⁵	0.010 ⁶
Commercial, A. T. 10.....	80-100 (Harnapp, G. O.: Monatschr. f. Kinderh. 63: 262, 1935. Shohl and Farber ⁴⁴)	0.025 ⁶
Toxisterol.....	Little or no anti- rachitic activity	0.025 ⁴⁰
Tachysterol.....	Little or no anti- rachitic activity	0.200 ⁴⁰
Lumisterol.....	Little or no anti- rachitic activity	Not toxic

* All the data on toxic borderline doses are obtained from observations on mice, by the method described,¹⁰ except for the observations of Morris and McLean³⁷ and of Shohl and Farber,⁴⁴ which were obtained on rats by comparison with dihydrotachysterol.

The action of the calcemic principle is nonspecific⁵ and is shared by vitamin D₂, vitamin D₃, 22-dihydro-vitamin D₂, dihydrovitamin D₂ II, tachysterol, dihydrotachysterol, 22-dihydrotachysterol and probably also toxisterol. Of these, only vitamin D₂, in the forms of crystalline calciferol and of viosterol, and dihydrotachysterol have received sufficient investigation and clinical trial to warrant a review of their usefulness in the treatment of hypoparathyroidism. Toxisterol appears to have toxic actions qualitatively different from those of the other substances considered.⁶

The chemistry of the activated sterols has been reviewed by Bills.⁷ Irradiation of ergosterol leads to the following chain of reactions: ergosterol→lumisterol→tachysterol→calciferol (vitamin D₂). Further irradiation leads to formation of toxisterol and of the supra-sterols I and II. More radiant energy is required to decompose calciferol than to produce it, so that when

irradiation is not unduly prolonged calciferol is the chief product.

Calciferol is vitamin D₂ and is available in pure crystalline form. The international unit (I. U.) of vitamin D, which is quantitatively the same as the U. S. P. unit, is equivalent to 0.000,025 mg., or 0.025 micrograms of crystalline calciferol. One milligram of calciferol is equivalent to 40,000 international or U. S. P. units of vitamin D. Vitamin D₃ is activated 7-dehydrocholesterol and is the chief form in which vitamin D is present in fish liver oils.

Viosterol is the nonproprietary name adopted by the Council on Pharmacy and Chemistry of the American Medical Association⁸ for all acceptable preparations of irradiated ergosterol. Under the best conditions of preparation it is composed of approximately 50 per cent of calciferol, with lumisterol and tachysterol accounting for most of the remainder.⁷ It is standardized in terms of its vitamin D activity, so that the content of lumisterol and tachysterol, which have little or no antirachitic effect, are not taken into account. In ordinary use, for the prevention or treatment of rickets, the amounts of these substances administered are negligible, but when doses sufficient to produce the calcemic effect of vitamin D are given tachysterol will contribute appreciably to this effect. Lumisterol has not been shown to have any toxic, or calcemic, effect.

The chemistry of dihydrotachysterol, including the method of preparation of a pure crystalline product, has been described in detail by von Werder.⁵ Dihydrotachysterol differs from calciferol only in the saturation of a double bond, but this difference is sufficient for the disappearance of all but a small fraction of the antirachitic action and for a decided enhancement of toxicity. Dihydrotachysterol is formed when tachysterol, one of the irradiation products of ergosterol, is treated with sodium and propyl alcohol. It is available only in the form of an oily solution, described as containing 5 mg. of the basic substance per cubic centimeter, of which approximately 2 mg. is pure dihydrotachysterol.⁵

Holtz and his co-workers¹⁰ introduced a biologic method by which the available preparation of dihydrotachysterol is standardized. A "toxic borderline dose" is the amount which when given in ten single daily doses over a period of thirteen days to a series of 8 male mice weighing from 16 to 18 Gm. will produce a loss in weight of more than 2.5 Gm. or death in at least 50 per cent of the animals.⁹ Table 1 summarizes the available information concerning antirachitic activity and toxicity of the preparations considered in this review.

DOSAGE AND TOXICITY

It will be shown that much confusion over the use of vitamin D in the management of hypoparathyroidism has arisen from the fact that there are two distinct dosage ranges for this substance. The prophylactic and curative range for the antirachitic effect, with which this review is not concerned, is ordinarily 700 to 1,000 international units a day.¹¹ The dosage necessary for the elevation of a subnormal serum calcium and its maintenance at a normal level is commonly 60,000 to 200,000 international units daily and may be even

8. New and Nonofficial Remedies, Chicago, American Medical Association, 1940.

9. Footnote deleted on proof.

10. Holtz, F.; Laquer, F.; Kreitmair, H., and Moll, T.: Beiträge zur Kenntnis des Vitamins D.: I. Mitteilung: Die Identifizierung im Tierversuch, Biochem. Ztschr. 227: 247-275, 1931.

11. Park, E. A.: The Therapy of Rickets, J. A. M. A. 115: 370-372 (Aug. 3) 1940.

3. Holtz, F., and Schreiber, E.: Einige weitere physiologische Erfahrungen über das bestrahlte Ergosterin und seine Umwandlungsprodukte, Ztschr. f. physiol. Chem. 191: 1-22, 1930.

4. Holtz, F.: Die Behandlung der postoperativen Tetanie, Arch. f. klin. Chir. 177: 32, 1933.

5. von Werder, F.: Ueber Dihydro-tachysterin, Ztschr. f. physiol. Chem. 260: 119-134, 1939.

6. Shohl, A. T.: Personal communication to the author.

7. Bills, C. E.: The Chemistry of Vitamin D, in the Vitamins, Chicago, American Medical Association, 1939, pp. 443-458; J. A. M. A. 110: 2150-2155 (June 25) 1938.

higher over short periods. Administration of dihydrotachysterol has been completely divorced from the system of units by which vitamin D preparations are standardized and, being standardized only in terms of its calcemic principle, is free from the confusion that exists in the case of vitamin D. Since the calcemic principle, common to both vitamin D and dihydrotachysterol, is identical with the factor responsible for the toxic manifestations of overdosage with both sterols, and since the desirable therapeutic effect depends on the administration of subtoxic doses of these substances, the question of dosage will here be considered in relation to toxicity.

The effectiveness of the calcemic principle is affected by the degree of parathyroid insufficiency, by the intake of calcium and phosphorus, by the female hormone, and perhaps by other physiologic variables. For this reason there are no absolute standards of dosages necessary to produce therapeutic or toxic effects. The available information, however, does not permit of any quantitative treatment of the subjects of dosage and toxicity in relation to the other variable factors concerned.

Initial Dosage.—Treatment of parathyroid insufficiency is commonly initiated with relatively large doses of the activated sterols, followed by smaller maintenance doses. Initial and maintenance doses will be considered separately.

Relatively large doses of dihydrotachysterol have been used and recommended for initiating treatment of acute attacks of hypoparathyroidism. More common practice, in chronic parathyroid insufficiency, is to initiate treatment with from 1 to 4 cc. daily of the oily solution (5 to 20 mg. of the basic substance). As it will be shown that at least 10 mg. of calciferol is required for a calcemic action equivalent to that of the 5 mg. of basic substance contained in 1 cc. of the solution of dihydrotachysterol, a corresponding daily dose of calciferol would be 10 to 40 mg., or 400,000 to 1,600,000 international units of vitamin D.

While these doses have the appearance of being enormous, owing to the system of units employed, there is little evidence of harmful effects of such doses, administered over relatively short periods. Spies and Hanzal¹² gave as much as 18,000,000 international units of vitamin D a day, in the form of viosterol, for from nine to twenty-five days to patients about to die of disease. They observed no symptoms referable to the medication, except for a rise in the serum calcium level to as high as 16.6 mg. per hundred cubic centimeters, and at autopsy found no pathologic calcification or other changes which they could attribute to the vitamin D. Steck and his associates¹³ administered as much as 3,000,000 international units of vitamin D a day for fifteen days to a normal subject without evidence of disturbance of any kind. Single doses of vitamin D, commonly about 600,000 international units, are now frequently administered to infants in the so-called Stosstherapie of rickets, the literature having been reviewed by Vollmer¹⁴ and by Reed, Struck and Steck.¹⁵ Cowdry and Scott¹⁶ reported giving viosterol

to monkeys, of less than 3 Kg. body weight, in doses amounting to 27,600,000 international units of vitamin D within two hundred hours. They made no mention of clinical symptoms. Goormaghtigh and Handovsky¹⁷ reported lethal effects on 4 dogs following single doses of 13 to 20 mg. (520,000-800,000 international units) of calciferol per kilogram of body weight. Five other dogs, given from 2.9 to 8 mg. per kilogram, survived.

Much of the earlier literature on the toxicity of vitamin D preparations must be discarded, owing to the wide use of a preparation of irradiated ergosterol with low vitamin D and high toxisterol content.¹⁸ In the literature of the past few years I have been able to find no report of serious toxic effects from large initial doses of dihydrotachysterol and only one case following large doses of vitamin D over a relatively short period of time. A case is reported¹⁹ of an obese physician aged 74 with generalized arteriosclerosis who took by mistake 2,300,000 international units of vitamin D, in the form of a concentrated solution of viosterol, daily for eighteen days, or a total of more than 40,000,000 international units. Nausea, anorexia, weakness, increased thirst and polyuria developed and finally he went into coma and died.

Maintenance Doses.—The dosage of the activated sterols necessary to maintain the serum calcium within normal limits, and to avoid the symptoms and sequelae of hypoparathyroidism, is dependent on the subject and certain physiologic variables, more particularly the degree of parathyroid deficiency present and the intake of calcium and phosphorus, and varies within wide limits. The extreme limits for dihydrotachysterol are given as from 0.15 to 1.0 cc. (0.75 to 5 mg. of the basic substance) daily. More commonly 0.3 to 0.5 cc. a day is needed. An equivalent dose of calciferol would be from 1.5 to 10 mg. (60,000-400,000 international units) a day for the extreme limits, and 3 to 5 mg. (120,000-200,000 international units) for the more commonly prescribed dose. The same variability, but within approximately the same limits, in the amounts of calciferol actually found to be necessary for maintenance doses is reviewed later.

Reports of accidental poisoning with vitamin D preparations, even when administered over long periods, have been rare in late years, most of the literature on the toxicity of these preparations having come from the deliberate administration of large doses in conditions other than hypoparathyroidism. In this connection Steck, Deutsch, Reed and Struck²⁰ have made an exhaustive investigation of the toxicity of vitamin D. For the most part they used concentrated preparations of viosterol, but comparable results were obtained with crystalline calciferol. They conclude that both human subjects and dogs generally survive administration of 20,000 international units of vitamin D per kilogram of body weight daily for indefinite periods without intoxication. Out of 773 human subjects receiving more than 100,000 international units daily over variable periods, 63 showed toxic symptoms, but with no deaths and with no effects from which recovery did not occur. Steinberg²⁰ administered a preparation of vitamin D, usually in doses of 160,000 international units a day, for periods of several weeks to one and one-half years,

12 Spies, I. D., and Hanzal, R. F.: Experimental Production of Hypercalcemia in Human Beings by Means of Irradiated Ergosterol, *Proc. Soc. Exper. Biol. & Med.* 31:747-750 (March) 1934.

13 Steck, I. E., Deutsch, H., Reed, C. I., and Struck, H. C.: Further Studies on Intoxication with Vitamin D, *Ann. Int. Med.* 10:951-964 (Jan.) 1937.

14 Vollmer, H.: Treatment of Rickets and Tetany by Parenteral Administration of One Massive Dose of Vitamin D, *J. Pediatr.* 16:419-432 (April) 1940.

15 Reed, C. I.; Struck, H. C., and Steck, I. E.: *Vitamin D*, Chicago, University of Chicago Press, 1939.

16 Cowdry, E. V., and Scott, G. H.: Effect on Monkeys of Small Doses of a Concentrated Preparation of Viosterol, *Arch. Path.* 22:1-23 (July) 1936.

17 Goormaghtigh, Norbert, and Handovsky, Hans: Effect of Vitamin D₂ (Calciferol) on the Dog, *Arch. Path.* 26:1144-1182 (Dec.) 1938.

18 Bills, C. E.: Physiology of the Sterols, Including Vitamin D, *Physiol. Rev.* 15:197 (Jan.) 1935.

19 Kerr, W. J., in discussion of paper by Freyberg, Grant and Robb.²¹

20 Steck, Deutsch, Reed and Struck.²²
20 Steinberg, C. L.: Massive Doses of Vitamin D in Chronic Arthritis: Its Effect on Calcium Metabolism, *J. Lab. & Clin. Med.* 24:17-24 (Oct.) 1938.

factor was completely independent of whether the vitamin D activity in the preparations used was destroyed by heating or reduction or not. The non-specificity of the calcemic effect has again been emphasized by von Werder,⁵ and the method used for standardization of dihydrotachysterol, which depends on the toxicity in mice, is in no way capable of distinguishing between the qualitative actions of the various sterols.

Holtz has published no experiments with a preparation identifiable with dihydrotachysterol as now distributed. However, von Brand, Holtz and Putschlar³³ compared the actions of various preparations, standardized in terms of their toxicity in mice, and of solution of parathyroid, using a large number of animals of various species. They found numerous differences; in the nature of the pathologic calcification produced, in the curve of the rise and fall of the serum calcium and in the relative susceptibility of the various species to the two substances. They consequently assumed a difference in the mode of action of the sterols and of solution of parathyroid but found, in spite of these differences, that in experimental tetany in dogs, resulting from a deprivation of parathyroid tissue, the action of the parathyroid hormone could be completely substituted for by the calcinosefaktor. In a subsequent paper Holtz, Gürschling and Kraut⁴⁰ confirmed these results by observations in man.

Albright, Bloomberg, Drake and Sulkowitch³⁰ have reported studies of the actions of dihydrotachysterol and of calciferol which have been much quoted. They made comparative studies of the actions of these two substances on the calcium and phosphorus metabolism of 3 patients with parathyroid insufficiency, and a similar study of the action of solution of parathyroid in 1 of these cases. They found that the two sterols have the same two actions of increasing calcium absorption from the gastrointestinal tract and of increasing phosphorus excretion in the urine, the ratio of the latter action to the former being greater with dihydrotachysterol. They noted also that the action of calciferol was slower in coming on and lasted longer than that of dihydrotachysterol. Albright, Sulkowitch and Bloomberg⁴¹ reported similar results in a case of vitamin D-resistant rickets, with the exception that dihydrotachysterol did not cause as marked a rise in excretion of urinary phosphorus. In none of these studies was consideration given to the possibility of a direct effect of the preparations on bone. They gave calciferol at the most in amounts equal to those given of dihydrotachysterol, while for strictly comparable effects the ratio should have been at least 2 to 1.³⁷

Himsworth and Maizels⁴² treated a patient with congenital hypoparathyroidism for six years, mainly with calciferol. The dosage was maintained, during the greater part of the time, at 12.5 mg. (500,000 international units) a week, with excellent results. During an interim period of ten months dihydrotachysterol was substituted for calciferol. It was effective in controlling the tetany, but the impression of the authors was that "in this patient vitamin D₂ produced a more stable state than did A. T. 10." They used up to 6 cc. a week of

the dihydrotachysterol preparation, which should have been equivalent to 60 mg. of calciferol, or nearly five times the dosage of the latter actually employed. Poer⁴³ has compared dihydrotachysterol and calciferol in the treatment of 11 cases of post-thyroidectomy hypocalcemic tetany. He found that the two substances are equally effective in controlling the symptoms of hypoparathyroidism and in maintaining the serum calcium level near the normal. His usual daily maintenance doses were 1.25 mg. (50,000 international units) of calciferol and 0.3 cc. (1.5 mg.) of dihydrotachysterol. It has not been found by others that this amount of calciferol is usually adequate for a maintenance dose.

Morris and McLean³⁷ have studied the actions of these two substances in rats. They compared the loss of weight, the mortality, the effects on the bones, as observed histologically, and the onset, distribution and intensity of pathologic calcification in the soft tissues. When given in a ratio of 2.24 mg. of calciferol to 1 mg. of dihydrotachysterol, the loss of weight of litter mates fed the two substances became indistinguishable, and the effects with reference to the other criteria enumerated were also comparable. Using the same dosage ratio, they administered the two substances to dogs. The serum calcium curves showed no significant differences, both substances exhibiting the same ability to raise the serum calcium. From these experiments it is concluded that calciferol must be administered in the ratio of at least 2 mg. to 1 mg. of the basic substance of the commercially available solution of dihydrotachysterol to obtain the same calcemic effect. Others have reported a still higher ratio for the doses necessary to produce comparable toxic effects in mice⁴⁰ and in rats⁴⁴ (table 1).

Shohl⁶ has made comparative studies of the pathologic changes induced in rats by toxic doses of calciferol and of dihydrotachysterol and has found that the two produce similar effects. Both caused striking lesions in the kidneys and blood vessels. Calcification was produced in the gastric mucosa. Both caused demineralization of the bones and hypercalcification at the zone of provisional calcification. Neither led to necrosis of the liver produced by an early preparation of irradiated ergosterol,⁴⁵ and now believed to be due to its high content of toxisterol.¹⁸

The comparative studies quoted indicate a qualitative difference between the actions of toxisterol on the one hand and vitamin D and dihydrotachysterol on the other. They fail, however, to disclose any difference in the actions of the two latter substances on which a preference for either one or the other may be based. Further carefully controlled comparative studies, in both clinical and experimental hypoparathyroidism, are required before it can be finally said that calciferol and dihydrotachysterol are of equal value in the management of this condition or that either has advantages over the other.

CLINICAL EXPERIENCE WITH DIHYDROTACHYSTEROL

Of a large number of reports on the use of dihydrotachysterol in hypoparathyroidism, virtually all are unreservedly favorable. In nearly every report the possibility of overdosage is discussed and the necessary

40. Holtz, F.; Gürschling, J., and Kraut, H.: Vergleichende pharmakologische Untersuchungen über Calcinosefaktor und Nebenschilddrüsenhormon. Arch. f. exper. Path. u. Pharmacol. 174: 51-62, 1933.

41. Albright, Fuller; Sulkowitch, H. W., and Bloomberg, Esther: A Comparison of the Effects of Vitamin D, Dihydrotachysterol (A. T. 10) and Parathyroid Extract on the Disordered Metabolism of Rickets. J. Clin. Investigation 18: 165-169 (Jan.) 1939.

42. Himsworth, H. P., and Maizels, M.: Vitamins D₂ and D₃ and A. T. 10 in Congenital Thyroid and Parathyroid Deficiency, Lancet 1: 959-960 (May 25) 1940.

43. Poer, D. H.: Dihydrotachysterol, Parathormone and Vitamin D: Comparison of Their Values in the Treatment of Post-Thyroidectomy Hypocalcemic Tetany. South. M. J. 33: 1174-1180 (Nov.) 1940.

44. Shohl, A. T., and Farber, S.: Effect of A. T. 10 (Dihydrotachysterol) on Rickets in Rats Produced by High Calcium-Low Phosphorus Diets. J. Nutrition 21: 147-154 (Feb.) 1941.

45. Shohl, A. T., Goldblatt, H., and Brown, H. B.: The Pathological Effects on Rats of Excess Irradiated Ergosterol, J. Clin. Investigation 8: 505-531 (June) 1936.

precautions are described, but there are few instances of actual toxic manifestations. In a discussion of the first eight years' experience with the preparation, Holtz²⁸ stated that long-continued administration is without harmful effects and without development of tolerance, that no lasting damage is done if a temporary hypercalcemia of about 15 mg. per hundred cubic centimeters is induced by overdosage and that the danger of toxic effects was overemphasized in the earlier publications. He reported that an occasional patient refractory to dihydrotachysterol was seen. This report of Holtz reflects the general tenor of the large German clinical literature, which will not be reviewed in detail here.

Dihydrotachysterol appears to have been first used in this country by Arnold and Blum,⁴⁶ who reported favorably on its effectiveness in 2 cases of postoperative and 1 of idiopathic tetany. Swinton⁴⁷ reported favorably on 6 cases of postoperative tetany. MacBryde,⁴⁸ from observation of its effects in 6 cases of chronic hypoparathyroidism and 1 of idiopathic tetany, stated that it was the only therapeutic measure in his experience to yield excellent results in treatment of chronic tetany. Pickhardt and Bernhard⁴⁹ reported 2 cases of postoperative tetany. Albright, Bloomberg, Drake and Sulkowitch⁵⁰ made extensive metabolic studies of 3 cases, concluding that dihydrotachysterol "is a most efficacious therapeutic agent in the treatment of hypoparathyroidism." Rose and Sunderman²⁵ reported 5 cases of hypoparathyroid deficiency, their observations including determinations of calcium balance, total and diffusible serum calcium, serum protein and inorganic serum phosphorus before and during administration of dihydrotachysterol. They concluded that this preparation is highly effective in increasing the concentration of calcium in the serum and in relieving the symptoms of parathyroid deficiency. In 1 of their cases, following 2 cc. of dihydrotachysterol daily for twenty-six days, severe symptoms of intoxication appeared, including vertigo, tinnitus, thirst, polyuria, nausea and abdominal cramps, with a rise of the serum calcium to 15.7 mg. per hundred cubic centimeters.

Numerous other reports have appeared,⁵⁰ the tone of all being favorable and all emphasizing the advantages

of dihydrotachysterol over solution of parathyroid in the management of the hypocalcemia associated with parathyroid insufficiency. The reports are virtually unanimous with respect to the details of management. An initial dosage of 1 to 4 cc. daily is commonly continued until the serum calcium level rises to 9 to 10 mg. per hundred cubic centimeters and the symptoms of tetany subside. Following this, individualization of the maintenance dose becomes necessary, and this dose is determined by trial and error. The maintenance dose varies between 0.15 and 1 cc. a day and is more commonly 0.3 to 0.5 cc., but owing to the duration of the action of the substance the required dosage need not be given more often than twice a week. The rise of serum calcium may occur without any addition of calcium to the dietary intake, but the same effect can be obtained with considerably lower dosage of the sterol if the calcium intake is supplemented with from 12 to 20 Gm. daily of a calcium salt, commonly the lactate, chloride or gluconate. The desirability of a low intake of phosphorus is also emphasized.

The most acceptable criterion for regulation of the dosage is frequent observation of the serum calcium level, but the Sulkowitch test, introduced by Albright,⁵¹ appears to be reliable, especially if checked occasionally with determinations of the serum calcium. The test gives a simple and rapid means of detecting or excluding excessive excretion of calcium in the urine, from which the presence or absence of hypercalcemia may be inferred. It has the great advantage that it may be applied daily, or even more frequently, by the patient himself, in much the same way that diabetic patients learn to perform rough quantitative tests for sugar in their urine. According to Goormaghtigh and Handovsky,¹⁷ a serum calcium concentration of 13 mg. per hundred cubic centimeters should be cause for alarm, as it is the prelude to massive calcium excretion, tubular distention and subsequent glomerular regression.

Holtz and Rossmann⁵² found that the dose of dihydrotachysterol had to be increased as much as six times during the latter half of pregnancy, and this has been confirmed by Curtis,²⁶ who gave 3 cc. daily during the last four months of pregnancy, or a dose equivalent to 30 mg. (1,200,000 international units) of calciferol a day. Holtz and Rossmann⁵² also found that the dosage of dihydrotachysterol may have to be increased during menstruation and that the effectiveness of a given dose is reduced by the administration of estradiol benzoate. On the other hand, the requirement for dihydrotachysterol is decreased after roentgen castration in women.⁵³

Holtz and Kramer⁵⁴ have found that larger doses are required during periods of activity, nervous strain and menstruation, and Arnold and Blum⁴⁶ have also noted the increased requirement when the patient becomes very active. The variations that are required in dosage with pregnancy and with administration of estrogen are reminiscent of the early observations of the influence of

46. Arnold, C. H., and Blum, H.: *The Control of Hypoparathyroidism*, West, J. Surg., Obst. & Gynec. **44**: 56-65 (Sept.) 1936.

47. Swinton, N. W.: *Postoperative Parathyroid Tetany*, New England J. Med. **217**: 165-169 (July 29) 1937.

48. MacBryde, C. M.: *The Treatment of Parathyroid Tetany with Dihydrotachysterol*, J. A. M. A. **111**: 304-307 (July 23) 1938; South. M. J. **31**: 720-725 (July) 1938.

49. Pickhardt, O. C., and Bernhard, A.: *The Treatment of Postoperative Tetany with Dihydrotachysterol*, Ann. Surg. **108**: 362-373 (Sept.) 1938.

50. These include:

Greene, J. A., and Swanson, L. W.: *Treatment of Hypoparathyroidism, with a Discussion of the Use and Action of Dihydrotachysterol* (A. T. 10), J. Iowa M. Soc. **29**: 275-279 (July) 1939.

Hurstthal, L. M., and Claiborne, T. S.: *Treatment of Tetany with Dihydrotachysterol* (A. T. 10), New England J. Med. **220**: 911-916 (June 1) 1939.

Berk, J. E.: *Clinical Experience with Dihydrotachysterol in the Management of Idiopathic Hypocalcemia*, Endocrinology **25**: 984-990 (Dec.) 1939.

Blackford, J. M., and Hallenbeck, G. A.: *Hypoparathyroidism, Treatment by Dihydrotachysterol*, Clinics of the Virginia Mason Hospital, Seattle **19**: 25-29 (June) 1940.

Franco, S. C.: *Parathyroid Tetany: Chronic Parathyroid Insufficiency of Ten Years' Duration Successfully Controlled with Dihydrotachysterol*, Ann. Int. Med. **14**: 529-532 (Sept.) 1940.

Richards, C. G.: *Postoperative Tetany*, Rocky Mountain M. J. **37**: 436-440 (June) 1940.

Wilkinson, J. C.: *Treatment of Tetany with Dihydrotachysterol*, Pennsylvania M. J. **44**: 37-40 (Oct.) 1940.

Newman, H. F.: *A Case of Hypoparathyroidism Treated with Dihydrotachysterol*, J. Mount Sinai Hosp. **6**: 327-332 (March-April) 1940.

Weber, F. C., Jr., and Richardson, H. B.: *Dihydrotachysterol* (A. T. 10) and Mineral Metabolism: A Metabolic Study, Endocrinology, to be published.

Margolis and Krause.²³

Adams.²⁴

Ryan.²⁵

51. Albright, Fuller: *Note on the Management of Hypoparathyroidism with Dihydrotachysterol*, J. A. M. A. **112**: 2592-2593 (June 24) 1939.

52. Holtz, F., and Rossmann, E.: *Schwangerschaft und Tetanie*, Ztschr. f. Geburtsh. u. Gynäk. **116**: 187-199, 1938.

53. Holtz, F., and Rossmann, E.: *Ueber Beziehungen der Sexualhormone zum Kalkstoffwechsel und zu den Nebenschilddrüsen*, Ztschr. f. Geburtsh. u. Gynäk. **116**: 199-212, 1938.

54. Holtz, F., and Kramer, F.: *Ueber Nebenschilddrüsentetanie, Kalkhaushalt, elektrische Erregbarkeit und A. T. 10*, Naturwissensch. **24**: 177-182 (March) 1936.

estrus, pregnancy and lactation on the course of experimental parathyroid tetany.⁵⁵

Hypercalcemia and other toxic manifestations of overdosage of dihydrotachysterol are usually managed by withdrawal of the medication, including the calcium added to the intake, by rest in bed and by increasing the intake of fluid. Holtz and Rossmann⁵³ suggested the administration of large doses of estrogens to combat toxicity, and Seiferth and Kolb⁵⁶ reported that the vitamin B complex and vitamin C have a far reaching inhibitory influence on the toxic effects of dihydrotachysterol. They reported that vitamin A increases the toxicity of this sterol, but Morgan, Shimotori and Hendricks⁵⁷ stated that a low intake of vitamin A leads to an increase in the damaging effects of toxic doses of vitamin D. None of these antagonistic actions appear to have been given adequate clinical trial in actual poisoning with the activated sterols.

In judging the usefulness of an activated sterol over a long period, consideration should be given to its ability to prevent or to relieve the complications or sequelae of parathyroid insufficiency, as well as to its ability to raise the serum calcium level. Of these, the most troublesome is the occurrence of cataracts. Klemens⁵⁸ described the opacities in the lens characteristic of hypoparathyroidism, as seen with the aid of the slit lamp, and stated that a presumptive diagnosis of the nature of the condition can usually be made from the changes in the eye alone. He stated that administration of dihydrotachysterol prevents this condition and as a rule arrests its progress if it has already begun before the preparation is administered. Because there is a widespread impression to the contrary, he emphasizes his statement that no clearing up of already formed opacities of the lens can be expected from administration of dihydrotachysterol. Schmidt-La Baume⁵⁹ has reviewed the use of dihydrotachysterol in dermatologic conditions associated with hypocalcemia, more especially in impetigo herpetiformis.

Certain cerebral and psychic symptoms are frequently associated with hypoparathyroidism. They include restlessness, irritability, depression, headache and occasional epileptiform convulsions, of central origin. These and other manifestations referable to the central nervous system are said to be relieved promptly by treatment with dihydrotachysterol. Barr, MacBryde and Sanders⁶⁰ reported a case of idiopathic hypocalcemic tetany, associated with increased intracranial pressure and papilledema, together with beginning opacities of the lens. The case responded promptly to treatment with dihydrotachysterol, and the authors suggested that edematous changes in the brain or meninges may occur in hypoparathyroidism more frequently than is recognized and that this factor may be of importance in producing cerebral and psychic

manifestations of tetany. Eaton and Haines⁶¹ reported 3 cases of parathyroid insufficiency with symmetrical cerebral calcification, in 1 of which the symptoms were relieved by administration of dihydrotachysterol. They regard symmetrical cerebral calcification, mental deterioration and convulsions as concomitant but not necessarily interdependent cerebral symptoms of hypoparathyroidism.

Dihydrotachysterol has been little used in infantile tetany, and Chu and Sung⁶² regarded it as of doubtful advantage in view of the common association of this condition with vitamin D deficiency and rickets. Bloxson,⁶³ however, has reported that hypocalcemic tetany in an infant, believed to be of parathyroid origin, was controlled by this sterol, but, it will be noted, in doses large enough to have an appreciable vitamin D activity. Eisenstein⁶⁴ has reported a case of tetany in an adult, regarded as "secondary to prolonged intestinal dysfunction," relieved by the administration of dihydrotachysterol. The preparation has also been used in other conditions, even more remote from disorders of the parathyroids. Its use in the treatment of otosclerosis, introduced by Seiferth⁶⁵ on the basis of reported slight reduction of serum calcium values in this condition, is stated by Schütz⁶⁶ to be without theoretical justification or empirical usefulness.

The American literature is still inadequate with respect to reports of the progress of patients kept under observation and under treatment with dihydrotachysterol over extended periods. It would be desirable to have further reports on some of the cases in which treatment was instituted some years ago.

VITAMIN D IN CLINICAL HYPOPARATHYROIDISM

It will be recalled, from the foregoing discussion of dosage and toxicity, that vitamin D ordinarily has no effect on the serum calcium level unless administered in a daily dosage range of 60,000 to 200,000 international units or even higher and that consequently no effect in the treatment of hypoparathyroidism, comparable to the beneficial effects reported from the administration of dihydrotachysterol, can be expected unless vitamin D is administered at these levels. Irradiated ergosterol was administered in these amounts in the treatment of clinical hypoparathyroidism as early as 1928 with good results,⁶⁷ but in most instances the dosage of vitamin D employed has been much below that which is necessary to produce the effects under discussion. The early literature has been reviewed by Boothby and Davis,⁶⁸ and many of the unfavorable or equivocal results quoted by them can be clearly traced to insufficient dosage. Except for purposes of comparison, this review will refer only to clinical experience with adequate doses of preparations of vitamin D.

55. Drasstedt, L. R.: The Physiology of the Parathyroid Glands, *Physiol. Rev.* 7: 499-530 (Oct.) 1927.

56. Seiferth, L. B., and Kolb, H.: Tierexperimentelle Untersuchungen über die Wirkung der Vitamine A, B und C bei A. T. 10-Vergiftung, *Ztschr. f. d. ges. exper. Med.* 106: 167-180, 1939.

57. Morgan, A. F.; Shimotori, N., and Hendricks, J. B.: Progress of Hypocalcemia in Rats and Recovery in Rats as Affected by Dietary Vitamin A and Vitamin A, *J. Biol. Chem.* 134: 761-779.

58. Klemens, F.: Auge und Epithelkörperchen Unterfunktion, *Deutsche med. Wchnschr.* 65: 753-754 (May 12) 1939.

59. Schmidt-La Baume, F.: Die Bedeutung des A. T. 10 für die Dermatologie als Substitutionstherapie bei Hypocalcämosen, *Med. Klin.* 33: 1590-1595 (Nov. 26) 1937.

60. Barr, D. P.; MacBryde, C. N., and Sanders, T. E.: Tetany with Increased Intracranial Pressure and Papilledema. Results from Treatment with Dihydrotachysterol, *Tr. A. Am. Physicians* 53: 227-232, 1958.

61. Eaton, L. McK., and Haines, S. F.: Parathyroid Insufficiency with Symmetrical Cerebral Calcification: Report of Three Cases, in One of Which the Patient Was Treated with Dihydrotachysterol, *J. A. M. A.* 113: 749-753 (Aug. 26) 1939.

62. Chu, T. F., and Sung, C.: Tetany in Infancy and Childhood: A Clinical Study of 45 Cases Seen in North China, with Special Reference to Etiology, *J. Pediat.* 16: 607-623 (May) 1940.

63. Bloxson, A.: Treatment of Tetany of the Newborn Infant with Dihydrotachysterol, *J. Pediat.* 16: 344-346 (March) 1940.

64. Eisenstein, V. W.: Chronic Adult Tetany of Gastrointestinal Origin: Treatment with Dihydrotachysterol: Report of a Case, *Pennsylvania M. J.* 44: 33-36 (Oct.) 1940.

65. Seiferth, L. B.: Ueber die Ätiologie und Behandlung der Otosklerose, *Arch. f. Ohren-, Nasen- u. Kehlkopf.* 143: 429-455, 1937.

66. Schütz, in discussion on Holtz, F.: *Deutsche med. Wchnschr.* 65: 781 (May 12) 1939.

67. Stern, A.: Zur Therapie der parathyreopren Tetanie mit Vitamin D, *Deutsche med. Wchnschr.* 54: 1292 (Aug. 3) 1928.

68. Boothby, W. M., and Davis, A. C.: Treatment of Parathyroid Insufficiency: An Interpretative Review of the Literature, *Arch. Int. Med.* 58: 167-184 (July) 1936.

Bauer, Marble and Claflin⁶⁹ reported in 1932 on 3 cases of hypoparathyroidism in which irradiated ergosterol was administered in doses of 5 mg. a day. The preparation was that responsible for much of the confusion concerning toxicity of vitamin D. Beneficial results were observed in all 3 cases, but only when the calcium intake was adequate. Reed and Seed⁷⁰ reported in 1933 on the treatment of 10 cases of parathyroid tetany in which viosterol was administered in doses up to 920,000 international units a day over periods of several days. Reed, Struck and Steck⁷¹ reported on the subsequent history of these patients, together with 5 more whose treatment was initiated after publication of the original report. In 1939 all but 5 of the 15 patients in the series had been able to discontinue vitamin D therapy without recurrence of tetany. Of these 5, 4 had continued the treatment for six or seven years but were able to secure freedom from tetany on approximately one tenth of the dosage required at first, and without recourse to calcium.

Freyberg, Grant and Robb⁷² emphasized the necessity for large doses if satisfactory results from the administration of vitamin D in hypoparathyroidism are to be expected. They gave as much as 200,000 international units of vitamin D as viosterol a day, with definite benefits, but most of the time used from 20,000 to 40,000 units. Stacey²² gave up to 8 mg. (320,000 international units) of calciferol a day, with favorable results. Himsforth and Maizels⁴² reported a case in which calciferol was given for six years, with excellent results. For the greater part of this time the dosage was maintained at 12.5 mg. (500,000 international units) a week. During one period vitamin D₃ was substituted for calciferol (vitamin D₂), with identical results. Farquharson⁷² undertook to find the smallest daily dose of irradiated ergosterol that would relieve the symptoms of 2 patients suffering from severe chronic postoperative tetany refractory to other forms of treatment. One of these patients became free from tetany and remained well for four and one-half years with a daily dose of 94,000 international units of vitamin D. In another patient, with the same dose, favorable results were obtained, the symptoms of tetany recurring when the medication was discontinued. Klatskin⁷³ made a careful study of 2 cases of chronic parathyroid tetany, giving calciferol in doses up to 7.5 mg. (300,000 international units) a day, without the occurrence of toxic manifestations. He recommended calciferol "as a valuable therapeutic agent in cases of chronic parathyroid tetany which do not respond to high calcium-low phosphorus diets and in whom satisfactory transplants of parathyroid gland are not possible." Poer⁴³ has used calciferol, in doses of 1.25 mg. (50,000 international units) a day, with effects comparable to those seen with dihydrotachysterol. Anderson and Lyall⁷⁴ found that the minimum dose of vitamin D necessary

to raise the serum calcium to a normal level in parathyroid deficiency appears to lie between 30,000 and 40,000 international units a day.

Of especial interest, in view of the conclusions in this review, are the reports in which vitamin D preparations are compared unfavorably with dihydrotachysterol. Table 2 summarizes data derived from five such reports⁷⁵ and includes the dosage of dihydrotachysterol required to produce the desired effect and the maximum dosage of vitamin D which failed to produce this effect. The latter is compared with the dosage of vitamin D calculated to be equivalent in "calcemic principle" with the dosage of dihydrotachysterol.

It is at once apparent from table 2 that the chief source of the unfavorable comparisons made by the authors of these reports is a misapprehension as to what constitute doses of vitamin D comparable to those of dihydrotachysterol. In three of the five reports the doses of vitamin D are 10,000 international units a day or less, or within an entirely different dosage range from that required to raise the serum calcium level. MacBryde⁴⁸ used up to 40,000 international units a day, or doses on the borderline of those found by others to be effective in the treatment of parathyroid insuf-

TABLE 2.—Summary of Reports Favorable to Dihydrotachysterol and Unfavorable to Vitamin D

Authors	Dihydrotachysterol: Daily Dose Giving Favorable Effect, Cc.	Vitamin D	
		Equivalent to Dihydro- tachysterol, Units	Maximum Actually Given, Units
Margolis and Krause ⁷⁵	1.0	400,000	1,700
Ryan ⁷⁵	0.5	200,000	3,000
Curtis ⁷⁶	1.0	400,000	10,000
MacBryde ⁴⁸	0.25-1.0	100,000-400,000	40,000
Adams ⁷⁶	2.0	800,000	120,000

iciency, but gave no further details. In the single case reported by Adams⁷⁶ he gave 120,000 international units of vitamin D daily for two weeks during subacute tetany five weeks after thyroidectomy, or an amount which ordinarily should have been sufficient to produce the calcemic effect. After two weeks of this treatment the symptoms continued unabated and the serum calcium remained at about 5 mg. per hundred cubic centimeters. After two weeks of treatment with 2 cc. of dihydrotachysterol (equivalent in calcemic principle to 800,000 international units of vitamin D) daily, the serum calcium rose only to 6.8 mg. per hundred cubic centimeters, but the symptoms were relieved. Two and one-half months later the patient was discharged on a maintenance dose of 1 cc. of dihydrotachysterol twice a week. It appears that during the acute or subacute stage of her tetany this patient was resistant to both vitamin D and dihydrotachysterol and that sufficient dosage only of the latter was given.

It would appear that there is no reason to attribute a higher degree of specificity or a lesser likelihood of toxicity to dihydrotachysterol than to vitamin D.

69. Bauer, Walter; Marble, Alexander, and Claflin, Dorothy: Studies of the Mode of Action of Irradiated Ergosterol, *J. Clin. Investigation* 11: 47-62 (Jan.) 1932.

70. Reed, C. L., and Seed, L.: The Treatment of Clinical Tetany with Irradiated Ergosterol, *Endocrinology* 17: 136-148 (March-April) 1933.

71. Freyberg, R. H.; Grant, R. L., and Robb, M. A.: Hypoparathyroidism: The Treatment of Chronic Cases, *J. A. M. A.* 107: 1769-1775 (Nov. 28) 1936.

72. Farquharson, R. F.: Hypoparathyroidism and Tetany, *Univ. Toronto M. J.*, November-December 1938.

73. Klatskin, G.: On the Actions of Crystalline Vitamin D₂ (Calciferol) in Chronic Parathyroid Tetany, *J. Clin. Investigation* 17: 441-443 (July) 1938.

74. Anderson, I. A., and Lyall, A.: Treatment of Chronic Hypoparathyroidism, *Quart. J. Med.* 8: 209-232 (July) 1939.

75. Margolis, H. M., and Krause, Gilbert: Postoperative Parathyroid Tetany, Complete Control of the Manifestations by Means of Dihydrotachysterol: Report of a Case, *J. A. M. A.* 112: 1131-1133 (March 25) 1939. Ryan, E. J.: The Treatment of Postoperative Parathyroid Tetany: Use of Dihydrotachysterol (A. T. 10), *M. Clin. North America* 24: 443-449 (March) 1940. Curtis⁷⁶ MacBryde,⁴⁸ Adams.⁷⁶

76. Adams, L. J.: Postoperative Tetany Treated with Dihydrotachysterol (A. T. 10), *Canad. M. A. J.* 42: 373-375 (April) 1940.

That doses of the latter sufficient to produce effects comparable to those of dihydrotachysterol can be given with at least the same degree of safety, provided the same precautions are observed, is established. There is needed, however, a larger volume of clinical experience with vitamin D comparable to that accumulated for dihydrotachysterol.

COMMENT

The present review emphasizes my point of view that the burden of proof is on those who would maintain that dihydrotachysterol is a better or safer agent in the treatment of hypoparathyroidism than is vitamin D. This statement does not in any way detract from the proved effectiveness, usefulness and comparative safety of dihydrotachysterol. It seeks merely, and on the basis of the available evidence, to put vitamin D in the same category with respect to the same physiologic actions and therapeutic usefulness.

The present favor in which dihydrotachysterol finds itself, in comparison with the disfavor or relative indifference to vitamin D, appears to have arisen from the following considerations: First, the earlier trials of vitamin D were mainly with inadequate dosage, and comparisons are still made between antirachitic doses of vitamin D and full calcemic doses of dihydrotachysterol. Second, the early experience with toxic preparations of irradiated ergosterol, resulting from their high content of toxisterol, led to a fear of poisoning with overdoses of vitamin D, a fear which has not been supported by the experience of the past few years. Third, the standardization of vitamin D products in terms of antirachitic units leads to the expression of dosages adequate for the management of hypoparathyroidism in terms of tens or hundreds of thousands or even of millions of units. With a background of fear of overdosage, the physician faces the psychologic barrier of having to prescribe what appear to him to be enormous, and frequently described as "massive," doses of a toxic preparation.

All these handicaps have been removed in the case of dihydrotachysterol. Although its toxic, and therapeutically effective, principle appears to be identical with that of vitamin D, it was introduced without the same fear of toxic effects. Its dosages are expressed in the innocuous terms of cubic centimeters, and even when "toxic borderline doses" are referred to the dosage is in hundreds rather than in millions of units. Moreover, it was introduced for one purpose only and has been given publicity only for this purpose. Without any direct claim to this effect having been made, the impression has become widespread that its action is specific, and in the current literature it is even referred to as "a new form of parathyroid hormone."

It is my belief, from the evidence available at present, that preparations of vitamin D are as effective and as free from danger as is dihydrotachysterol. More clinical experience is needed, and a system of standardization and of dosages free from the present handicaps to the use of vitamin D for the purposes here discussed is required. For pure vitamin D₂, or calciferol, dosage should be

expressed in milligrams. Preparations of irradiated ergosterol should be standardized in terms of their content of the calcinosefektor, which will include the activity of the tachysterol content. The method of Holtz, Laquer, Kreitmair and Moll¹⁰ is probably suitable for this purpose. The physiologic activity, in terms of the toxic factor, should then be referred back to pure calciferol rather than to arbitrary "toxic borderline units." A rough calculation, assuming that irradiated ergosterol contains about 25 per cent tachysterol, indicates that average viosterol should have about 16 per cent more calcemic activity than is indicated by its content of vitamin D₂.

It now seems that the dangers of administration of both dihydrotachysterol and of vitamin D have been somewhat exaggerated. They must be administered with care and with the proper precautions, but the immediate dangers are apparently no greater than in the case of insulin. Frequent determinations of serum calcium are desirable not only during the initial stages but also after maintenance doses have been arrived at. The Sulkowitch test,¹¹ by which the excretion of calcium into the urine is observed by a simple and roughly quantitative method, may serve to avoid the necessity for frequent examinations of the blood.

That prolonged administration of these products will lead to chronic injury in man has not been shown, nor is it clear that the danger does not exist. The effects on the arteries and arterioles of dogs have been referred to. In any case the possibility of such danger must, in cases of hypocalcemia resulting from hypoparathyroidism, be weighed against the very probable occurrence of opacities of the lens, and perhaps of other sequelae of this condition. At present the evidence is that the risk of injury from the therapeutic agent is far less than that from the condition which it is intended to combat.

Finally, I wish to enter a plea for the abandonment of the term "hypervitaminosis D." Not only is the term misleading and nondescriptive but it is also a deterrent to the legitimate and desirable use of vitamin D products in the treatment of hypocalcemia. The term "vitamin D," without further qualification, refers solely to the antirachitic activity of the activated sterols, although "vitamin D₂" and "vitamin D₃" are now used to refer to specific chemical substances. Since the toxic effects from administration of vitamin D products are shared with other products having little or no vitamin D activity, it is clear that the characteristics of the sterol molecule responsible for its antirachitic activity are not those responsible for the toxic effects. There is no evidence that overdosage with the antirachitic factor per se leads to any undesirable effects. For these reasons the toxic actions of the activated sterols should be separated from their antirachitic activity in terminology as they are in fact.

SUMMARY

1. A number of substances derived from activation products of ergosterol and cholesterol have the effect of raising the serum calcium when administered in sufficiently large doses, this effect resulting from a combination of the mobilization of calcium from the bones and an increase in absorption from the gastrointestinal tract. Of these, only vitamin D₂ (calciferol)

77. Slaughter, E. C.: Experimental Hyperparathyroidism and Osteosclerosis, *Ann. Otol., Rhin. & Laryng.* 49: 130-140 (March) 1940.

and dihydrotachysterol (also known as A. T. 10) have been extensively used clinically.

2. Because of this effect on the serum calcium, here called the "calcemic effect," both of these substances are highly effective in increasing the concentration of calcium in the blood and in relieving the symptoms resulting from hypocalcemia in cases of insufficiency of the parathyroid glands. The substances may be administered by mouth over considerable periods of time and with reasonable safety, provided proper precautions are observed. Their prolonged use is attended neither by injury to the patient nor by the development of tolerance.

3. When the two substances are administered in comparable doses their effects are qualitatively and quantitatively similar, if not identical. It has not been shown that either is superior to the other in the management of hypoparathyroidism. Previous unsatisfactory experience with vitamin D products has been due either to insufficient dosage, in which case no beneficial results were obtained, or to the effects of a widely used preparation containing the toxic products of overirradiation.

4. The dangers of the toxic effects of these substances in the preparations now available, while real, have been somewhat overemphasized. Frequent determinations of serum calcium are desirable both to determine that the desired elevation has been obtained and to avoid the dangers of hypercalcemia. The Sulkowitch test, by which the excretion of calcium into the urine is observed and which the patient himself learns to perform, serves to permit close observation and at the same time to reduce the frequency of the necessary blood examinations.

5. While the possibility of chronic injury resulting from prolonged administration of these substances has not been excluded, such injury has not been demonstrated. At present the evidence is that the risk of injury from the therapeutic agent is far less than that from the condition it is intended to combat.

6. The "calcemic principle" responsible for the elevation of serum calcium and for the toxic actions of the activated sterols has been dissociated from the antirachitic activity of certain of these sterols. In the case of vitamin D the antirachitic activity and the calcemic action are apparent in widely separated dosage ranges. Confusion as to dosage and the expression of calcemic doses in terms of tens or hundreds of thousands of units have been handicaps to the use of vitamin D in the management of hypocalcemia.

7. It is urged that these handicaps be removed by the expression of dosages for the calcemic effect in terms of weight of calciferol. In the case of viosterol, which contains other substances with the same action but not accounted for in the standardization of this preparation in terms of antirachitic activity, the calcemic effect should be determined by biologic standardization and referred back to pure calciferol.

8. The term "hypervitaminosis D" should be abandoned. The term is misleading and non-descriptive and is a deterrent to the legitimate and desirable use of vitamin D products in the treatment of hypocalcemia.

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Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.
HOWARD A. CARTER, Secretary.

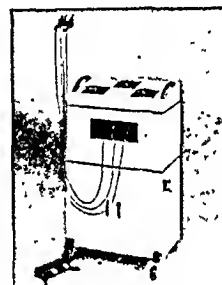
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The Burdick SU-4 Electrosurgical Unit provides a means of applying the various technics used in surgical diathermy. Two currents, one of which is from a spark gap high frequency generator and the other from a vacuum type oscillator, are supplied. For cutting, the tube current alone or a blend of the two currents is used, and the current from the spark gap generator is used alone for coagulation. Standard accessories furnished with the unit include an electrode handle with cork and attachment plug, silver indifferent electrode, small and large size ball coagulation electrodes, needle for cutting or coagulation, tungsten knife blade and straight knife blade for dissection, set of five long needles and ball electrodes for coagulation, and an instrument rack.

Mounted on a steel chassis, the unit is contained in a steel cabinet having a white enamel finish. A lower section of the cabinet provides storage space for the foot switch, cords and accessories. A removable instrument tray is supplied with the apparatus.

The standard type spark gap circuit has a high voltage condenser with heat dissipating cast aluminum mountings connected across the transformer secondary. A WL-460 tube is used in the Hartley circuit with parallel feed plate supply, using alternating current for its anode voltage, and is isolated from the spark gap oscillator and blending circuit by variable magnetic coupling. Five line voltage adjustments are provided by a line transformer.



Burdick SU-4 Electrosurgical Unit.

The blending circuit contains a coil capacity coupled to the spark gap circuit and magnetically coupled to the tube circuit, being common to these two generating circuits. The patient circuit is capacity coupled to this coil. Since the two generating circuits operate without appreciable influence on each other and either generator will feed the patient outlet alone, the output blended current is the sum of their individual outputs. The parallel connection of circuits is a feature; according to the firm, with this connection the ratio of between the spark gap oscillator component in the blended current remains constant with varying patient impedance and current. A separate circuit and outlet provided for large electrode coagulation disconnects the spark gap circuit from the blending circuit.

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The unit was investigated clinically by the Council and was found to give satisfactory service.

The Council voted to accept the Burdick SU-4 Electrosurgical Unit for inclusion on its list of accepted devices.

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SATURDAY, AUGUST 23, 1941

ALLEGED TYPHOID ULTRAVIRUS

Among the basic medical researches interrupted by the war, Magrassi's¹ introductory studies of the toxicity or pathogenicity of the dissociable "Vi antigen" of *Eberthella typhosa* are of peculiar interest. Ordinary laboratory strains of the typhoid bacillus differ from freshly isolated cultures, as was demonstrated nearly fifty years ago by Sanarelli.² He found freshly isolated bacilli highly toxic for guinea pigs and mice and incapable of agglutination with antityphoid serum. Both the toxicity and the inagglutinability, however, are rapidly decreased and eventually lost on subculture. Sanarelli concluded that toxicity, virulence or pathogenicity are nonessential characters of the typhoid bacillus, which may be gained or lost by proper environmental exposure. The typhoid bacillus, according to this view, was a nonpathogenic mechanical carrier of some unknown autocatalytic toxic enzyme in about the same way that it is now conceived to carry bacteriophage.

Sanarelli's discredited theory was reformulated by Felix and Pitt³ about forty years later. They found that in addition to the well recognized flagellar and somatic antigens a third antigen is present in freshly isolated strains of *E. typhosa*. This third antigen gradually decreases in amount and eventually disappears on subculture, its decrease being parallel with loss of toxicity or virulence. Felix and Pitt therefore suggest that this third antigen should be known as the "virulence factor" or "Vi antigen."

Numerous investigators have shown that this Vi antigen is readily dissociable from the typhoid bacillus. By incubating a freshly isolated saline suspension of *E. typhosa* for four hours, the Vi factor is set free in the suspension fluid and may be separated from the formed elements by high speed centrifugation or Chamberland filtration. The highly toxic filtrate thus obtained is

readily inactivated by heating to 60 C. for thirty minutes.

Friedberger⁴ had said that a dissociable toxic factor plays a role in clinical typhoid. Aqueous extracts of the organs of patients dying of typhoid were found to be highly toxic for guinea pigs. The brains of guinea pigs killed during the acute febrile reaction to this tissue toxin will transfer the toxic symptoms to normal guinea pigs, and brain to brain transfer of typhoid "endotoxin" could be continued indefinitely without appreciable loss of virulence. Friedberger concluded from this serial transfer that the etiologic factor in typhoid is a double "entity," a microscopically visible and culturable typhoid bacillus supplemented by an invisible, noncultivable autocatalytic "cryptic antigen." In today's terminology this "cryptic" antigen would be classed as an ultravirus.

This "binomial" theory of typhoid was received with universal skepticism twenty years ago. Following the development of modern theories of synergic virus-bacterial infections (e. g. swine influenza), however, experimental verification of the Friedberger concept was undertaken by Italian investigators. Sanarelli and Alessandrini,⁵ for example, attempted to disprove the theory by showing that Friedberger's alleged synergic ultravirus is nothing more than an invisible phase of *E. typhosa*. In this they were unsuccessful, as regeneration of the typhoid bacilli was not possible from the invisible toxic filtrate.

Friedberger's synergic theory was therefore tentatively accepted as a working hypothesis by the Italian investigators. Magrassi and his co-workers¹ of the Institute for General Clinical Medicine, University of Rome, confirmed Friedberger's basic experiments. Substituting baby rabbits for the more resistant guinea pigs of previous experiments, they found that a Chamberland filtrate of partially autolyzed virulent *E. typhosa* is highly toxic. Injected intraperitoneally or intravenously in 4 to 8 cc. doses of standard dilution (200 million *E. typhosa* organisms per cubic centimeter) the Vi antigen produces diarrhea, muscular weakness and rapid loss of weight with an occasional death within twenty-four hours. Most of the rabbits, however, soon recover from the initial symptoms following injection and remain apparently normal for from eight to twelve days. At the end of this latent period a recurrence of the diarrheal symptoms develops. The rabbits usually lose a third of their original weight before death, which usually occurs in from two to three days. An occasional animal may survive as long as ten to thirty days. Magrassi found that the initial toxic reaction could be avoided by reducing the dose of the filtrate to 0.5 cc. injected intracerebrally. The terminal fatal emaciating

1. Magrassi, F., and Galli, F.: *Boll. r. Acad. med. di Roma* 64: 7, 1938. Magrassi, F., Galli, F., and Scalfi, L.: *Arch. f. ges. Virusforsch.* 1: 324, 1940.

2. Sanarelli, G.: *Ann. Inst. Pasteur* 6: 721, 1892.

3. Felix, A., and Pitt, R. M.: *J. Path. & Bact.* 38: 409 (May) 1934.

4. Friedberger, E., and Meissner, G.: *Klin. Wchnschr.* 2: 47 (March 5) 1923. Friedberger, E., and Cecchini, A., *ibid.* 2: 2345 (Dec. 24) 1923.

5. Sanarelli, G., and Alessandrini, A.: *Ann. d'ig.* 42: 129 (March) 1932; 43: 621 (Sept.) 1933.

diarrhea after a latent period of eight to twelve days is the only toxic manifestation by this method of injection.

On necropsy a great majority of the intracerebrally injected rabbits yielded heart blood, brain, spleen and liver that were bacteriologically sterile, colon bacilli being the only occasional contaminant. Confirming Friedberger's discredited data, Magrassi found that 0.5 cc. of a 10 per cent aqueous extract of the brains at necropsy would reproduce the fatal emaciating diarrhea if injected intracerebrally into normal rabbits and that this brain to brain transmission of the autocatalytic toxic factor could be continued for at least six generations, the highest number of passages attempted by the time of the interruption of his work.

The possibility that this apparently successful transfer of typhoid encephalitis might be due to some latent neurotrophic virus was eliminated by the Italian investigators, who did numerous control tests. Heat inactivated Vi antigen, autolysates of avirulent strains of *E. typhosa* and 10 per cent extracts of normal rabbit brains would not reproduce the disease. Magrassi found also that the heart blood of the rabbits which were subjected to such passage almost invariably contained typhoid agglutinins of relatively high titer (e. g. 1:400 to 1:12,800), a specific antibody production that could hardly be expected from an unknown contaminant.

A second constant finding in the rabbits with typhoid encephalitis was a massive overgrowth of colon bacilli in the small intestine. This led to the belief that the hypothetical typhoid ultravirus is capable of "activating" or "energizing" normal intestinal saprophytes, conferring on them a distinct toxicity or pathogenicity. This overgrowth led the Italian investigators to believe that the terminal emaciating diarrhea in typhoid encephalitis is due to "Vi activation" of colon bacilli.

Attempts to measure the size of this hypothetical typhoid ultravirus, its cultivation on modern virulologic mediums and its possible infectivity on intranasal instillation were not completed at the time of the discontinuation of this work. Magrassi, however, feels justified in concluding from his interrupted data that a highly pathogenic ultravirus can be dissociated from freshly isolated virulent typhoid bacilli, that this dissociated virus is capable of independent multiplication in the brain and other tissues of baby rabbits, and that so grown the ultravirus is capable of directly or indirectly "activating" the normal intestinal flora, conferring a lethal toxicity on it.

Friedberger's discredited synergic theory of typhoid infection has therefore apparently received sufficient experimental confirmation to warrant serious reconsideration.

THE PATIENT COMES FIRST

Hardly half a century has passed since hospitals for the treatment of private patients were first established. Previously hospitals were maintained for the benefit of those who were destitute. Obviously such hospitals depended for their support on public appropriations or on voluntary gifts. Services of the physician were freely contributed without thought of compensation. Asepsis, which made possible elective operations, and a radical change in our domestic economy, initiated fundamental changes in the situation. Now all classes of society have become accustomed to resort to the hospital both for diagnosis and for treatment in minor as well as in major illnesses. The hospital today frequently derives a part, sometimes all, of its income from paying patients. Increasingly hospitals sell their services to the self-supporting members of society.

This transformation of the economic status of the hospital has not been achieved without evidences of maladjustment, as emphasized by Dr. Miles Atkinson¹ in the *Atlantic Monthly*. Amidst the complexities of organization and administration, he says, we have lost sight of the fact that hospitals exist primarily for the benefit of the sick. The doctor occupies the second place in importance. Without him and the patient there would be no need for the hospital. Building and equipment are needed to aid the physician to apply his knowledge and skill in the treatment of the sick. The hospital and its administrators, then, take only the third place in the medical economy, a fact too often overlooked, so that the hospital organization becomes an end in itself, to the detriment of patient and staff. The present crisis, according to Dr. Atkinson, is due at least in part to the lavish expenditures of the postwar era, which have left us a legacy of costly buildings, heavy mortgages, needless equipment and unnecessary personnel. The notion that aggregations of institutions would simplify management or effect economies has proved to be a delusion. "A hospital is not a factory." Patients cannot be treated *en masse*. One of the evils of unduly expanded institutions is excessive specialization.

Private hospitals in recent years, by reason of diminishing income from endowment and from subscriptions, have resorted to the policy of charging in the lower income brackets whatever the traffic will bear. Unforeseen consequences of this policy have been the exploitation of the patient and of the doctor as well. Too often the roentgen ray department and laboratories have been operated for profit. The same may be true of the pharmacy. In either case the patient and the public suffer, as well as the physician and pharmacist.

Dr. Atkinson concludes that hospitals are abusing their position. Nobody cavils at the work they do, but many cavil at the means they adopt to do it. The hospitals, he believes, are in a parlous state, and something very soon will have to be done about it.

¹ Atkinson, Miles: *The Patient Comes First*, *Atlantic Monthly*, August 1941.

Current Comment

ESSENTIAL FRUCTOSURIA

Essential fructosuria is a rare anomaly of metabolism, apparently harmless but sometimes mistaken for diabetes. It is characterized by inability to utilize fructose completely. The disturbance is manifested by the presence of fructose in the urine in amounts proportional to the quantity of sugar ingested. Because of its rarity it has been difficult to speculate convincingly concerning the etiology. Now however Lasker,¹ by adding 7 new cases to the literature and analyzing them as well as the 40 previously reported, is enabled to demonstrate a familial occurrence. Although the evidence for inheritance of this disturbance is not yet conclusive, its occurrence in sibs, its nonoccurrence in the parents and offspring of persons with fructosuria, and the frequency of consanguinity of parents of such persons all offer evidence to indicate that fructosuria is inherited as a mendelian recessive characteristic. Final confirmation of this theory may be long in coming, however, since additional evidence can be accumulated only slowly because of its rarity.

BIOTIN IN TUMOR TISSUE

The search for biochemical differences between normal and tumor tissue is being continued by investigators with the hope that the presence of an abnormally low or unusually high concentration of a particular substance in tumor tissue may be a clue to some aberration in the metabolism of living tissue which is responsible for the neoplasm. Of particular interest are substances of vitamin or enzyme nature which, as components of catalytic systems, exert a profound regulatory effect on the rate of metabolic processes. Biotin, or "vitamin H," is one of the more recently studied of these compounds and is said to exert a catalytic influence in minute concentrations. This substance is essential for the normal function of many micro-organisms and also for higher animals. In a recent preliminary communication, West and Woglom¹ report observations on the relative abundance of this growth factor in various tissues, including certain tumor tissues. In the case of every type of tumor studied, with one exception, the biotin content of the tumor was found to be distinctly higher than the concentration of this vitamin in control normal tissue of the same type. In rats with primary carcinoma of the liver induced by feeding butter yellow, the biotin level of the liver adjacent to the neoplasms was found to be normal, while the carcinomas themselves, unlike the other tumors analyzed, were distinctly lower in their biotin content. In every case studied the biotin level of the tumor deviated sharply from the normal adult values in the same direction as that of the corre-

sponding embryo tissues. This relationship appears to be a difference in metabolism shared by tumor and embryo rather than a change common to all rapidly dividing tissue, as the biotin content of rat liver vigorously regenerating after partial hepatectomy or of the pregnant human uterus was not found to differ from that of the same tissues in a nonhyperplastic state. It has been further suggested by Laurence² that both malignant cells and micro-organisms which have been found associated with the observed cases of spontaneous recession of tumors require excess biotin for their metabolic activities. If this hypothesis is correct, the spontaneous recessions might be explained as the direct result of biotin deficiency brought about by the avidin-like action of the micro-organisms, thus depriving the malignant cells of a factor vital for their continued existence. (Avidin is a special constituent from raw egg white, which has a biotin-binding capacity *in vitro*.) Whether or not this theory can be confirmed, the discoveries already made have opened a new line of investigation on the physiology of tumors.

ORAL ANDROGENIC THERAPY

Physicians have been recently advised of the availability of an androgen which is far more potent, orally, than the testicular hormone testosterone. This substance, methyl testosterone, has been shown to be as effective orally as one third to one fourth the amount of injected testosterone propionate necessary for adequate replacement therapy in eunuchoid or castrate animals. The biochemists who first prepared this material have indeed made a noteworthy contribution to endocrinology. Nevertheless, physicians should not readily accept the extravagant therapeutic claims made by the firms which are marketing this substance (Schering, Roche-Organon and Ciba) or the urge to prescribe methyl testosterone as an economical and practical form of medication. The Council on Pharmacy and Chemistry has declared, in a report on the status of testosterone propionate, that final judgment of androgenic therapy must await additional evidence and that the only worthwhile indication for this therapy at present seems to be its application in the treatment of eunuchoidism or castration in the male. The other indications for androgenic therapy should be subjected to further investigation. In the light of this report, the indications for methyl testosterone should be scrutinized carefully. Furthermore, relatively large amounts of methyl testosterone are essential for effective therapy. On the basis of available reports, it is necessary to administer 50 to 100 mg. of this material daily for complete replacement therapy in the castrate. Physicians should therefore contemplate the economic aspects of administering such doses over the appropriate period of time. Actually reports dealing with the use of methyl testosterone in such conditions as menstrual disorders, painful breasts, menopausal symptoms and prostatic adenoma are meager and quite inconclusive.

1. Lasker, Margaret: *Essential Fructosuria*, *Human Biol.* **13**: 51 (Feb.) 1941.

1. West, P. M., and Woglom, W. H.: *Science* **93**: 525 (May 30) 1941.

2. Laurence, William L.: *Induced Biotin Deficiency as a Possible Explanation of Observed Spontaneous Recessions in Malignancy*, *See* **94**: 88 (July 25) 1941.

MEDICAL PREPAREDNESS

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.

THE PREHABILITATION OF REGISTRANTS

V. A UNIVERSITY PROGRAM TO PREPARE STUDENTS FOR MILITARY SERVICE

RUTH E. BOYNTON, M.D.

AND

HAROLD S. DIEHL, M.D.

MINNEAPOLIS

The administration of the University of Minnesota believes that higher educational institutions have not only an opportunity but also an obligation to prepare their students for the parts which they will be called on to play in the national defense program. University departments concerned with health, physical fitness and recreation are in a position to utilize their resources in equipment, buildings and personnel to render a special service to the men who will be selected for military training. With this in mind, during the spring quarter of 1941 an experimental program was planned and carried out for the prehabilitation of university students registered under the Selective Training law.

This program consisted of (1) registration of all men in the university to determine their status in regard to Selective Service, (2) a complete medical examination according to the physical standards of the Selective Service Act, (3) an examination to determine the physical strength and endurance of these students, (4) a written examination to give information of the recreational interests and skills of these men, (5) a comprehensive examination in personal hygiene and public sanitation, with special attention to requirements of army life, and (6) the development of a program based on information gained in these tests which would enable all students needing remedial work or special classes to obtain them.

REGISTRATION

The only part of this program which was compulsory was the registration of all male students in the university. A card was sent to each male student asking for information on age, whether registered for Selective Service, and if so registered his classification (if any), his Selective Service numbers, and whether he expected an early or late call for Selective Service. Such information cards were sent to over nine thousand male students. Of this number 46 per cent replied that they had registered for Selective Service. In certain colleges with older students the percentage registered for Selective Service was naturally much higher. For example, in the Graduate School 92 per cent of the students were registered, in Medicine 87 per cent and in Dentistry 76 per cent, whereas in the College of Science, Literature and the Arts only 26 per cent of students were of draft age.

Of those students registered for Selective Service, one thousand, two hundred and sixty-eight either had

low call numbers or signified their wish to participate in the prehabilitation program, although they did not expect an early call.

MEDICAL EXAMINATIONS

The medical examinations were given during the spring vacation and in the evening of the first week of the spring quarter to make it possible for students to have examinations without interfering with their class work. The examinations were carried out according to the physical examination standards set up under the Selective Service Act. On completion of the examination each student was classified according to Selective Service standards as follows: class I-A, fit for general military service; class I-B, fit for limited military service; class 4-F, unfit for any military service.

Nine hundred and twenty-nine students were given medical examinations. The classifications of these according to the physical standards of the Selective Service Act were as follows: class I-A, 599, or 64 per cent; class I-B, 199, or 21 per cent; class 4, 79, or 8.5 per cent; classification deferred pending further study, 52, or 6.5 per cent. Over one half of the 52 whose classification was deferred will be put in class I-A. Approximately 30 to 33 per cent of the group will finally be classified either as class I-B or class 4. This percentage is approximately the same as that found among the men in this vicinity already inducted into military service under the Selective Service Act.

Table 1 lists the major causes for restricted classification with the percentage rejected for unlimited service for each cause. Although the total percentage of university students classified as I-B or class 4 is approximately the same as for the draftees who have been examined by the Selective Service examiners, the causes for restricted classification differ from the findings of the draftees examined in Minnesota. A report on the physical examination of 17,337 Minnesota registrants for Selective Service who were examined during January 1941 is available. Of this number 33 per cent were put in class I-B or class 4. A comparison of the defects which caused disqualification for these draftees with the defects found in University of Minnesota students is given in table 2.

The two striking differences between the groups are the high percentage of college students given restricted classifications because of visual defects and the low percentage of college students given restricted classifications because of defective teeth. The large majority of students with restricted classifications because of visual defects were myopic. All cases so classified had the myopia corrected by glasses. The 7 per cent of the group who were restricted in classification because of underdevelopment were those who were either underweight or under the required height or whose chest measurements did not meet the standards set under the Selective Service regulations. Many of the young men in this group could reach the standards set by a proper program of diet, rest and exercise.

It is worthy of note that the large majority of university students who were given restricted classifications because of physical defects had defects of a character which are not correctible so far as army service is concerned. All students whose physical defects are remediable are being followed up and arrangements are being

TABLE 1—*Causes for Restricted Classification*

	Class I B—Total No., 199	
	Number	Per Cent
Defects of vision	114	57.7
Orthopedic defects	22	11.1
Underdevelopment	20	10.0
Hearing loss	9	4.6
Teeth	7	3.5
Hernia	7	3.5
All other	20	10.0

	Class 4—Total No., 79	
	Number	Per Cent
Defects of vision	39	49.4
Orthopedic defects	9	11.4
Ear defects	8	10.1
Duodenal ulcer	7	8.9
Heart disease	6	7.6
All other	10	12.6

made for the correction of these defects through the student's private physician or through the Health Service.

PHYSICAL STRENGTH OR FITNESS TESTS

The physical fitness tests were given by the Department of Physical Education for Men. These tests were designed to give an estimate of the "present condition" of the men relative to their ability to sustain physical effort and to resist fatigue and at the same time to test their native ability for certain types of activities. The tests as given consisted of:

1. The number of times the subject could "push up" on the parallel bars.
2. The number of times he could pull up on the horizontal bar ("chin").
3. The height (in inches) that he could jump (measured from standing reach to jumping reach).
4. The time it took him to run 440 yards.
5. His ability to swim

The combination of the first three tests of physical fitness has been found to correlate significantly with physical ability and is a relatively good indication of physical development. It is the opinion of the Department of Physical Education and quite generally of the physical education profession that a combination of tests, such as those included in this battery, gives a fairly good indication of the subject's physical condition and ability.

These tests were given to seven hundred and sixty-one university men in the group who were registered for Selective Service. The results of the tests showed that this group of students was approximately 8 per cent below the norm for college men. It seems evident that probably the majority of college men could profit from some program which would "condition" the muscles, thereby making the transition from college life to army service easier for the individual.

SPORTS KNOWLEDGE TEST

A sports knowledge test, which was given to 805 men, consisted of objective tests of ten items on each of fourteen sports. The sports selected were those which are likely to be available to the men who are serving in

the various branches of the service. It was the opinion of the Department of Physical Education that a fundamental knowledge of several sports would contribute to the student's ability to use wisely his leisure hours and would therefore be helpful in his adjustment to life in the cantonment. This opinion is based on the fact that, if a person has some knowledge of and skill in an activity, he is more likely to participate in that activity if the opportunity presents itself. Although no norms are available for the tests given, in general it was found that these university men have a fairly adequate knowledge of sports in general but are somewhat lacking in knowledge and skills in individual sports—that is, those sports which require only one or two participants.

HEALTH INFORMATION TESTS

The health information test on personal and public health and hygiene was given to eight hundred and seventeen men in this group. Out of a possible score of 188, the all-college median was 117, with a range from 106 to 146.

When the results of this test were divided according to colleges, it was evident that students in colleges which include health information courses in their curriculums attained the highest scores. The results of this test led us to recommend that all colleges require some course in health education for all students.

On completion of all these tests each student was given a report on his individual results and advised of the facilities which the university had to offer him so that he might make up any deficiencies found.

The information on the number of students who have availed themselves of these facilities on a voluntary basis is not complete, but from the information available it appears that relatively few students have changed their programs to include special work in physical education or personal hygiene. One reason for this is that this plan was started after students had completed registration for the spring quarter and it was difficult for them to make adjustments at that time. It seems evident, however, that if a university is to aid young men in preparing themselves, so far as health and physical fitness are concerned, for army service, a compulsory program must be adopted.

TABLE 2—*Comparison of Defects*

	University Students Total No., 218	Minnesota Draftees Examined in January 1911 Total No., 2,003
Defects of vision	55.0%	10.0%
Orthopedic defects	11.0%	11.0%
Underdevelopment	7.0%	0.5%
Ear defects	8.0%	3.6%
Teeth	3.0%	2.8%
Hernia	2.5%	1.5%
Heart disease	2.2%	0.0%
Tuberculosis	0.0%	1.1%
Venerable diseases	0.0%	1.1%

* Percentage of total defects

As a result of this trial program in the spring of 1941, the Administrative Committee of the University Senate recommended that, for the fall quarter of the school year 1941-1942,

1. A medical examination be offered again on an optional basis.

2. The faculties of each college of the university consider the desirability of requiring each student to take an introductory course in personal and public health for credit.

3. The physical fitness tests which were given as a part of the spring quarter program be included as a required part of

the medical examination which is compulsory for all incoming students. If this should be done, all students who were found to need "conditioning" could be encouraged to take a carefully planned, individual, remedial program in physical education.

4. In view of the importance of national physical fitness, the colleges of the university institute a required program in physical education with credit.

TRAINING OF VOLUNTEER NURSES' AIDES

The U. S. Director of Civilian Defense, Mayor F. H. LaGuardia, announces the training of one hundred thousand volunteer nurses' aides during the next twelve months, in collaboration with the American National Red Cross and the major hospitals of the country. The program is in preparation for a great expansion in hospital beds which may be required during the national emergency.

The growing deficiency in hospital personnel is now being met in part through the training of large numbers of paid subsidiary hospital workers by the NYA, WPA and other agencies. The training program for volunteer nurses' aides is designed to expand the effectiveness of the trained nurse in hospitals, clinics and field nursing services by supplying her with intelligent assistants who can work under her direction.

The curriculum of instruction has been prepared by the Medical Division of the Office of Civilian Defense, the American National Red Cross and the Federal Security Agency. Eligibility is limited to women between the ages of 18 and 50 who have had at least a high school education or its equivalent and who are physically fit. The course will provide eighty hours of intensive instruction in a period of seven weeks. The first half of the course will be given in the local Red Cross chapter house in collaboration with local hospitals and nursing organizations. This will constitute the probationary period and will require two hours of instruction daily on five days a week for four weeks.

The second half of the course will consist of supervised practice in a hospital which has been designated by the Office of Civilian Defense and the Red Cross as a training center. The American National Red Cross will assist the hospital to provide competent instructors and nursing supervisors.

Those who complete the course will be enrolled in the Volunteer Nurses Aide Corps of the American Red Cross with the assurance that they will play an important role in civilian defense. They will retain their membership in the corps only as long as they continue to render adequate service during the period of the national emergency. This is defined as one hundred and fifty hours of volunteer service in a hospital, clinic or field nursing organization in at least one three month period in each calendar year.

The Office of Civilian Defense and the American National Red Cross will provide for this continuing service by arrangement with local hospitals and field nursing agencies. For this purpose the Red Cross will maintain a placement bureau, which will allocate volunteer nurses' aides to the following types of nursing service: hospitals and clinics, visiting nurse (home visiting) agencies, health departments, school health services and industrial hygiene clinics.

By serving in this manner as assistants to qualified nurses, their training will be continued. In the event of sudden emergencies during a period of national crisis they will then be immediately available for reassignment to hospital or field duty by the Office of Civilian Defense. There will be opportunity for some to serve as members of the mobile medical field units which are being organized in hospitals along both seaboard and in industrial centers in the interior, according to plans announced this week by the U. S. Office of Civilian Defense.

Volunteer nurses' aides will wear the uniforms and insignia of civilian defense. The new insignia for nurses' aides will be a red cross within the triangle and circle of the Office of Civilian Defense, indicating that the aide was enrolled and trained by the Red Cross to serve in civilian defense.

Applicants may enroll at the Red Cross chapter house, and the course will begin in each locality as hospital arrangements are completed.

In addition, a committee has been appointed to prepare for distribution to students and advisers a booklet of information giving systematic guidance and advice on opportunities in courses and activities at the university in the fields of health, physical education and recreation for both selectees and the general student body.

OVERSEAS MEDICAL SUPPLIES ARRIVE SAFELY

The Medical and Surgical Relief Committee of America, 420 Lexington Avenue, New York City, announces in its annual report that supplies valued at \$251,698.08 have been shipped overseas during the last year and a half and that every consignment shipped was safely delivered to its destination. While the committee was organized in 1940 to aid Great Britain, the committee has expanded its purpose to provide medical and surgical supplies also for people in China, the Free French, the Free Greeks, the inhabitants of Iceland and the Royal Norwegians on British convoys. The original New York City committee has been augmented by three hundred subcommittees throughout the country and yet the operating expenses have been kept down to 7 per cent of the total receipts, according to Mrs. Rogers Balcom, executive chairman of the committee. Surgical instruments still head the list of requests received from overseas. There is a great demand also for sulfanilamide and its derivatives, for quinine, for vitamins, for tryparsamide and for antitoxins.

RELIEF COMMITTEE SELLS EMBLEMS

The Medical and Surgical Relief Committee of America opened the sale of a new emblem during the annual session of the American Medical Association in June. The emblem has the form of a modified caduceus combined with a sword of mercy and sells for \$1. At the ceremony in Cleveland Miss Theodate Johnson, national vice chairman, presented emblems to Drs. Nathan B. Van Etten, New York, then President, and Frank H. Lahey, Boston, now President of the American Medical Association.

During its first year the committee shipped to Great Britain and the allied countries supplies valued at \$191,198. The year's operating expenses amounted to 6½ per cent of the total receipts, a result attributed to voluntary service on the part of physicians and nurses.

It was announced on June 30 that \$10,000 worth of supplies shipped to the Free French in Iceland had arrived safely. Thirteen cases of supplies were recently shipped to relief agencies in Cairo, Egypt.

RESERVE OFFICERS WITH THE SECOND, TENTH AND ELEVENTH INFANTRY

The following medical reserve officers were recently on duty with the regiments indicated in the Sixth Corps Area:

2D INFANTRY

APPELMAN, Howard B., Captain	SCHUTZMAN, Benjamin M., 1st
LEAVITT, Samuel S., 1st Lieut.	Lieut.
MILLARD, Allen L., Major.	SINTZEL, Alois R., Captain.
NELSON, Charles A., 1st Lieut.	STARSIK, Casimir R., 1st Lieut.
RUBIN, Simon S., Captain.	PEARLMAN, Maurice D., 1st
ROMANSKI, Arthur F., 1st	Lieut.
SOROCK, Milton L., 1st Lieut.	PISZCZEK, Edward A., 1st Lieut.
	PRUDOWSKY, Harry, 1st Lieut.
	WOOD, Cordelle A., Major.

10TH INFANTRY

BROWNSTEIN, Stanley, 1st	NEBINGER, Rankin A., Captain.
Lieut.	STORER, William R., 1st Lieut.
DILORETO, Panfilo C., 1st Lieut.	SUGAR, Hyman S., Captain.
FEINERMAN, Albert H., 1st	THOMAS, Clyde O., Captain.
Lieut.	WILSON, Orley E., 1st Lieut.

11TH INFANTRY

BAUHOFF, Ned F., 1st Lieut.	GREENBERG, Morris Z., 1st
BUERMANN, Henry, Jr., 1st	Lieut.
Lieut.	KANNER, Irving F., 1st Lieut.
FELDMAN, Emanuel, 1st Lieut.	MARCUS, Louis L., 1st Lieut.
FLAX, Moses, 1st Lieut.	RIGHTMAN, Bert, 1st Lieut.
	STEIN, Albert F., 1st Lieut.

ARMY RESERVE OFFICERS ORDERED TO ACTIVE DUTY

SIXTH CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Sixth Corps Area, which comprises the states of Wisconsin, Michigan and Illinois:

BERNS, Robert S, Captain, Danville, Ill, Headquarters and Station Complement, Corps Area Service Command, Camp Davis, N C
DURHAM, Everett William, 1st Lieut, Dearborn, Mich, 202d Corps Area, Fort Bliss, Texas
FRIEDLAENDER, Sidney, 1st Lieut, Detroit, 33d Division, Camp Forrest, Tenn

ANDERSON, E Gilbert, 1st Lieut, Rockford, Ill
BRANDEL, John M, 1st Lieut, Owasco, Mich
CARY, Erwin C, Captain, Reedsville, Wis
CHRISTIANSON, Oscar O, Captain, Peoria, Ill, 1608th Corps Area Service Unit, Camp Grant, Ill
DUDEY, Edwin F, Major, Decatur, Ill
DVORAK, Harold J, Captain, Milwaukee
ESPEY, Hugh S, 1st Lieut, Chicago
FELDMAN, Harold, Captain, Pekin, Ill
GEHRINGER, Norman F, 1st Lieut, Pontiac, Mich
GOLDSTEIN, Hyman H, 1st Lieut, Chicago, 33d Division, Camp Forrest, Tenn

Orders Revoked

GIBSON, Thomas E, Captain, Lansing, Mich, Station Complement, Selfridge Field, Mich
HAUSMANN, Richard K, 1st Lieut, Waupun, Wis, 202d Corps Area, Fort Bliss, Texas
ROSEN, Benjamin B, 1st Lieut, Chicago, 33d Division, Camp Forrest, Tenn
VEDDER, Charles A, 1st Lieut, Marshfield, Wis, 1604th Corps Area Service Unit, Fort Brady, Mich
WADE, Chester, 1st Lieut, Chicago U. S Army Induction Station, Chicago

HIRSCH, Donald A, 1st Lieut, Chicago
JACOBS, Maurice B, 1st Lieut, Chicago
KEHL, Sylvester C, Major, Chicago
MANTELL, Bernard, 1st Lieut, Maywood, Ill
MARCUS, Daniel B, 1st Lieut, Detroit
NELSON, Charles A, 1st Lieut, Pekin, Ill
O'DONNELL, Steven P, 1st Lieut, Kiel, Wis
ROBERSON, Brooks L, 1st Lieut, Wood River, Ill
RUSKIN, Dave B, 1st Lieut, Wahjamega, Mich, 3d Armored Division, Camp Polk, La
SIMPSON, Reed Morgan, 1st Lieut, Medora, Ill
VERMEREN, Paul C, 1st Lieut, Chicago

SEVENTH CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Seventh Corps Area, which comprises the states of North Dakota, South Dakota, Minnesota, Nebraska, Iowa, Kansas, Missouri, Arkansas and Wyoming:

AHERN, Gerald Stehler, 1st Lieut, Minneapolis, 6th Medical Battalion, Fort Leonard Wood, Mo
AHRENS, John Heideman, 1st Lieut, University City, Mo, Corps Area Service Command, Replacement Center Infirmary, Fort Leonard Wood, Mo

ANDERSON, Wallace Everett, 1st Lieut, Thief River Falls, Minn, Camp Grant, Ill

ANNEBERG, Paul Daniel, 1st Lieut, Carroll, Iowa, Corps Area Service Command Engineers Replacement Center Infirmary, Fort Leonard Wood, Mo

ANSCHUTZ, Robert Ralph, 1st Lieut, Kansas City, Mo, Camp Grant, Ill

AYLWARD, Howard Joseph, 1st Lieut, Clayton, Mo, Corps Area Service Command Station Hospital, Camp J T Robinson, Ark

BACI, Donaciano E, 1st Lieut, Papillion, Neb, Corps Area Service Command Station Hospital, Fort Riley, Kan

BARKER, John Dennis, 1st Lieut, Warren, Minn, Air Base, Portland, Ore

BARKER Lawrence Fergusson, 1st Lieut, St Louis, 1st Field Artillery Battalion, Fort Leonard Wood, Mo

BARRENT, Milton Edward, 1st Lieut, Sioux City, Iowa, Camp Grant, Ill

BARRY, William Burnett, 1st Lieut, Kansas City, Mo, Corps Area Service Command, Station Hospital, Fort F E Warren, Wyo

BECHTOLD, Frederick Frank, 1st Lieut, St Louis, Corps Area Service Command Replacement Center Infirmary, Jefferson Barracks, Mo

BISHOP, Marion Dale, 1st Lieut, St Louis, Camp Grant, Ill

BLAIR, James Berl, 1st Lieut, Broken Bow, Neb, Corps Area Service Command, Engineer Replacement Center Infirmary, Fort Leonard Wood, Mo

BOYD, Eugene Judd, 1st Lieut, Iowa City, Corps Area Service Command Station Hospital, Fort Riley, Kan

BRADLEY, Ben Hughes, 1st Lieut, Richmond Heights, Mo, 20th Infantry, Fort Leonard Wood, Mo

BUELL, Arthur Louis, 1st Lieut, Batesville, Ark, Replacement Training Center, Camp Grant, Ill

BUSSABARGER, Robert Allison, 1st Lieut, Wardell, Mo, 43d Engineers, Camp J T Robinson, Ark

CAMPBELL, Harry Bryant, 1st Lieut, St. Louis, 20th Infantry, Fort Leonard Wood, Mo

CAMPBELL, Robert Evans Jr, 1st Lieut, Cedar Rapids, Iowa, Corps Area Service Command Induction Station, Fort Des Moines, Iowa

CARLSON, Elmer Henry, 1st Lieut, Muscatine, Iowa, Fort Leonard Wood, Mo

CARP, Oscar, 1st Lieut, Omaha, Corps Area Service Command Reception Center Infirmary, Camp J T Robinson, Ark

CASEY, Elmer Barney M, Lieut Colonel, St Louis, Camp Grant, Ill

CONTI, James Philip, 1st Lieut, St Louis, 20th Infantry, Fort Leonard Wood, Mo

COUCH, Orrie Alexander, Jr, 1st Lieut, Iowa City, Iowa, Camp Grant, Ill

CURTIS, William Shepley, 1st Lieut, St Louis, Camp Grant, Ill

DAVIS, Christopher Gates, 1st Lieut, Kansas City, Kan, Camp Grant, Ill

DEW, Hogan Allen, 1st Lieut, Hamburg, Ark, 1st Infantry, Fort Leonard Wood, Mo

DONNELLY, Bernard Aloysius, 1st Lieut, Iowa City, Fort Douglas, Utah

DORMAN, John Wesley, 1st Lieut, Dyess, Ark, 142d Field Artillery, Fort Sill, Okla

DRAKE, Charles Centennial, Jr, 1st Lieut, St Louis, McChord Field, Tacoma, Wash

DREXLER, George Warren, 1st Lieut, Minneapolis, 1st Infantry, Fort Leonard Wood, Mo

DUPONT, Joseph Arthur, 1st Lieut, Excelsior, Minn, 6th Medical Battalion, Fort Leonard Wood, Mo

ELLIOTT, William Henry, Jr, 1st Lieut, St Louis, Corps Area Service Command Station Hospital, Fort Meade, S D

EVANS, Byron Henry, 1st Lieut, Cedar Rapids, Iowa, Camp Grant, Ill

FERGUSON, Lewis Hamilton, 1st Lieut, St Louis, Camp Grant, Ill

FLYNN, John Timothy, 1st Lieut, St Louis, Fort Leonard Wood, Mo

FOSTER, Miles Everett, 1st Lieut, St Louis, Fort Leonard Wood, Mo

GALT, Charles E. Jr, 1st Lieut, Ferguson, Mo, Camp Grant, Ill

GARETZ, Michael Allen, 1st Lieut, Minneapolis, 6th Medical Battalion, Fort Leonard Wood, Mo

GARRETT, Glenn Harley, 1st Lieut, Clay Center, Kan, for temporary duty with Medical Replacement Training Center, Camp Grant, Ill

GATES, Charles Lee, 1st Lieut, Ulrich, Mo, Corps Area Service Command Station Hospital, Fort Leavenworth, Kan

GEPPERT, Leo Joseph, 1st Lieut, Vermillion, S D, Camp Grant, Ill

GERSON, Charles Everett, 1st Lieut, St Louis, Corps Area Service Command Station Hospital, Fort Leonard Wood, Mo

GLASSMAN, Arthur Leonard, 1st Lieut, Iowa City, Engineers Replacement Center Infirmary, Fort Leonard Wood, Mo

GRAVES, James Huntington, 1st Lieut, St Paul, 92d Engineer Battalion, Fort Leonard Wood, Mo

GRAY, Herschel Fredrick, 1st Lieut, Little Rock, Ark, 1st Infantry, Fort Leonard Wood, Mo

GREENHOUSE, Jerome Mayer, 1st Lieut, University City, Mo, Camp Grant, Ill

GREGORY, Kendall Deertur, 1st Lieut, St Louis, Camp Grant, Ill

HAMILTON, Charles Terrill, 1st Lieut, Iowa City, Corps Area Service Command Station Hospital, Fort Leonard Wood, Mo

HAMILTON, Ralph Block, 1st Lieut, West Memphis, Ark, Air Base (Nonflying status), Everett, Wash

HARPER, Harry Penn, 1st Lieut, Rochester, Minn, Corps Area Service Command Station Hospital, Fort Riley, Kan

HARRIS, Charles Preston, 1st Lieut, Leachville, Ark, Air Base (Nonflying status), Pendleton, Ore

HAWES, William John, Major, Columbia, Mo, Headquarters and Headquarters Battery, 6th Division Artillery, Fort Leonard Wood, Mo

HAZLET, Kenneth Kirk, Iowa City, Corps Area Service Command Station Hospital, Fort Leonard Wood, Mo

HEIMANN, Verne Rodney C, 1st Lieut, Albia, Iowa, Corps Area Service Command Induction Station, Fort Snelling, Minn

HEITZMAN, Paul Otto, 1st Lieut, Burlington, Iowa, 51st Field Artillery Battalion, Fort Leonard Wood, Mo

HENDERSON, Walker Bland, Major, Oelwein, Iowa, 6th Medical Battalion, Fort Leonard Wood, Mo

HEYWOOD, Leo Thomas, 1st Lieut, Omaha, Fort Leonard Wood, Mo

HILGER, David William, 1st Lieut, St. Paul, Corps Area Service Command Induction Station, Fort Leavenworth, Kan

HOBERT, Francis William, Captain, Lake City, Iowa, Medical Replacement Center, Camp Grant, Ill

HOGABOOM, Gilbert Murray, 1st Lieut, Hot Springs, Ark, 35th Division, Camp Joseph T Robinson, Ark
 HOFFMAN, George Robert, 1st Lieut, Minneapolis, 1st Infantry, Fort Leonard Wood, Mo
 HOLLENHORST, Robert William, 1st Lieut, St Cloud, Minn, 6th Medical Battalion, Fort Leonard Wood, Mo
 HOPKINS, Florian Goss, 1st Lieut, Gideon, Mo, Corps Area Service Command Station Hospital, Camp J T Robinson, Ark
 HOTTINGER, Raymond Creighton, 1st Lieut, Jamesville, Minn, Fort George Wright, Spokane, Wash
 HOWE, Louis Francis, Captain, Union, Mo, Medical Replacement Center, Camp Grant, Ill
 HUBER, Tiron Ehrhart, 1st Lieut, St Louis, Camp Grant, Ill
 HURST, Thomas Charles, 1st Lieut, Kansas City, Mo, Camp Grant, Ill
 JANUARY, Lewis Edward, 1st Lieut, Iowa City, Corps Area Service Command Quartermaster Replacement Center Infirmary, Fort F E Warren, Wyo
 JOHNSON, Robert Hall, 1st Lieut, St Louis, 6th Medical Battalion, Fort Leonard Wood, Mo
 JORDAN, Raymond Ellsworth, 1st Lieut, St Louis, Medical Replacement Training Center, Camp Grant, Ill
 KAISER, Max Elliott, 1st Lieut, Ottawa, Kan, Medical Replacement Center, Camp Grant, Ill
 KEOHEN, Gerald Francis, 1st Lieut, Iowa City, Iowa, Camp Grant, Ill
 KILTZ, Richard Clyde, Captain, Omaha, Corps Area Service Command Induction Station, Fort Cook, Neb
 KIMBALL, John Egbert, Jr, 1st Lieut, St Louis, Camp Grant, Ill
 KINGSLAND, Robert Chenault, 1st Lieut, St Louis, Corps Area Service Command Station Hospital, Fort Crook, Neb
 KLAIT, Daniel David, 1st Lieut, St Louis, for temporary duty with Medical Replacement Training Center, Camp Grant, Ill
 KNIGHT, William Allen, Jr, 1st Lieut, St Louis, Camp Grant, Ill
 KOBER, William Melvin, 1st Lieut, Little Rock, Ark, 4th Cavalry, Fort Meade, S D
 KOTNER, Lawrence Melvin, 1st Lieut, University City, Mo, Quartermaster Replacement Center Infirmary, Fort F E Warren, Wyo
 KRAVITZ, Morton Atherton, 1st Lieut, Kansas City, Corps Area Service Command Station Hospital, Fort Riley, Kan
 KUGLER, Frank Elbert, 1st Lieut, Iowa City, Corps Area Service Command Station Hospital, Fort F E Warren, Wyo
 KURIS, David B, 1st Lieut, Duluth, Minn, 6th Medical Battalion, Fort Leonard Wood, Mo
 LAKAYTIS, Charles Alexandra, 1st Lieut, Kansas City, Mo, Camp Grant, Ill
 LATTUADA, Henry Deter, 1st Lieut, St Louis, Replacement Training Center, Camp Grant, Ill
 LAUDICINA, August, 1st Lieut, St Louis, Corps Area Service Command Station Hospital, Fort Snelling, Minn
 LEE, Wayne Robert, 1st Lieut, Burlington, Iowa, Corps Area Service Command Quartermaster Replacement Center Infirmary, Fort F E Warren, Wyo
 LIMAURO, Andrew Benedict, 1st Lieut, St Louis, Camp Grant, Ill
 LINDLEY, Ellsworth LaVerne, 1st Lieut, Muscatine, Iowa, 1st Infantry, Fort Leonard Wood, Mo
 LONDON, Lewis Bolter, 1st Lieut, Little Rock, Ark, Corps Area Service Command Station Hospital, Camp J T Robinson, Ark
 LONERGAN, Warren Mellies, 1st Lieut, St Louis, Camp Grant, Ill
 LOVE, William Robert, 1st Lieut, Rochester, Minn, Corps Area Service Command Station Hospital, Fort Snelling, Minn
 MACDONALD, William Charles, 1st Lieut, St Louis, Camp Grant, Ill
 MCCAIN, Donovan Legare, 1st Lieut, St Paul, Corps Area Service Command Station Hospital, Fort F E Warren, Wyo
 MCCONKIE, Edwin Bruce, Captain, Cedar Rapids, Iowa, Corps Area Service Command Replacement Center Infirmary, Jefferson Barracks, Mo

McDONALD, George James, 1st Lieut, St Louis, Corps Area Service Command Station Hospital, Fort Snelling, Minn
 MCGOARTY, Brian John, 1st Lieut, Easton, Minn, Camp Grant, Ill
 McKEE, Leo Francis, 1st Lieut, Kansas City, Kan, Corps Area Service Command, Replacement Center Infirmary, Fort Leonard Wood, Mo
 MACKENBROCH, Frederick Caspar, 1st Lieut, Omaha, Corps Area Service Command Station Hospital, Fort Leonard Wood, Mo
 MADDUX, William Paul, 1st Lieut, Buffalo, Mo, Quartermaster Replacement Center Infirmary, Fort F E Warren, Wyo
 MARK, Hilbert, Major, Minneapolis, Camp Grant, Ill
 MARKING, George Henry, 1st Lieut, Osseo, Minn, Camp Grant, Ill
 MELLIES, Chester John, Captain, Mount Vernon, Mo, Corps Area Service Command Station Hospital, Fort Riley, Kan
 MERENDA, Sam John, 1st Lieut, St Louis, 6th Division Headquarters and Headquarters Battery, Fort Leonard Wood, Mo
 MERRILL, Robert Lowe, 1st Lieut, St Louis Camp Grant, Ill
 MINGE, Raymond Kenneth, 1st Lieut, Clarkfield, Minn, 92d Engineer Battalion, Fort Leonard Wood, Mo
 MIRA, Joseph John, 1st Lieut, St Louis, Camp Grant, Ill
 MOEN, Berwyn Harold, 1st Lieut, Inwood, Iowa, Camp Grant, Ill
 MORGAN, John Lloyd, 1st Lieut, Emporia, Kan, Camp Grant, Ill
 MULLER, Albrecht Eugene, 1st Lieut, St Paul, 6th Medical Battalion, Fort Leonard Wood, Mo
 MUNDT, Leslie Krow, 1st Lieut, Helena, Ark, Corps Area Service Command Station Hospital, Fort Leonard Wood, Mo
 MUNSCH, Girard Augustus, 1st Lieut, St Louis, Camp Grant, Ill
 MURRAY, Edward Stevenson, 1st Lieut, Cedar Rapids, Iowa, Corps Area Service Command Quartermaster Replacement Center Infirmary, Fort F E Warren, Wyo
 NESTER, Charles Adolph, 1st Lieut, St Louis Camp Grant, Ill
 NEURNBERGER, Robert Earl, 1st Lieut, Omaha, 80th Field Artillery Battalion, Fort Leonard Wood, Mo
 NOTHNAGEL, Arnold Fred, 1st Lieut, Kansas City, Kan, Corps Area Service Command Station Hospital, Fort Riley, Kan
 OGBORN, Robert James, 1st Lieut, Sioux Falls, S D, 6th Medical Battalion, Fort Leonard Wood, Mo
 OLSON, Alton Curtis, 1st Lieut, Minneapolis, Corps Area Service Command Station Hospital, Fort Riley, Kan
 OLSON, Duane Charles, 1st Lieut, Gaylord, Minn, Camp Grant, Ill
 QUATTLEBAUM, Frank Walter, 1st Lieut, Crookston, Minn, Camp Grant, Ill
 PANGBURN, Merrill Walter, 1st Lieut, Miller, S D, nonflying status, Moffett Field, Calif
 PASSANANTE, Bartholomew M, 1st Lieut, University City, Mo, 63d Infantry, Fort Leonard Wood, Mo
 PAYNE, Voris Ralph, 1st Lieut, St Louis, Camp Grant, Ill
 PETTERSON, Cecil Edward, 1st Lieut, Norton, Kan, Ogden Air Depot (nonflying status), Ogden, Utah
 POHLMAN, John Francis, 1st Lieut, Wichita, Kan, Camp Grant, Ill
 RICH, George Theodore, 1st Lieut, Grand Forks, N D, Corps Area Service Command Station Hospital, Fort Leonard Wood, Mo
 RLEVES, Eugene Albert, 1st Lieut, Kansas City, Kan, Camp Grant, Ill
 REID, Joe Winston, 1st Lieut, Arkadelphia, Ark, Camp Grant, Ill
 RITTER, Eugene Francis, 1st Lieut, Coatesville, Mo, 6th Engineer Battalion, Fort Leonard Wood, Mo
 ROBERTSON, Howard Thomas, 1st Lieut, Concordia, Kan, Camp Grant, Ill
 RODMAN, George Hurst, 1st Lieut, St Louis, Camp Grant, Ill
 SAAR, John William, 1st Lieut, Salt Lake City, Ogden Air Depot (nonflying status), Ogden, Utah
 SCALES, James Russell, 1st Lieut, Rochester, Minn, 6th Engineer Battalion, Fort Leonard Wood, Mo

Orders Revoked

AAGESEN, Carl A, 1st Lieut, Dows, Iowa
 AYLWARD, Howard Joseph, 1st Lieut, Clayton, Mo, 6th Division, Headquarters and Headquarters Battery, Fort Leonard Wood, Mo
 BAILEY, William H, 1st Lieut, St. Louis
 BEBER, Meyer, Captain, Omaha
 BERMAN, William, 1st Lieut, St Louis
 BIRGE, Richard Fuller, Captain, Des Moines, Iowa, Corps Area Service Command Station Hospital, Fort Leonard Wood, Mo
 BLAIR, James Berl, 1st Lieut, Broken Bow, Neb
 BOE, Henry, Captain, Sioux City, Iowa
 BOLEY, James O, 1st Lieut, Pilot Grove, Mo
 BURT, Elmer G, 1st Lieut, Crossett, Ark
 BUZZELLE, Leonard K, 1st Lieut, Minneapolis
 CAIRNS, Robert J, 1st Lieut, Sanborn, Minn
 DECKER, Rudolph F, Captain, Byron, Neb
 DRACE, Charles Centennial, Jr, 1st Lieut, St Louis
 DREWLER, George Warren, 1st Lieut, Minneapolis
 EDWARDS, Thomas Jefferson, 1st Lieut, St Paul, Corps Area Service Command Station Hospital, Fort Leonard Wood, Mo
 ENGLISH, Wallace D, Captain, Cardwell, Mo
 ERICKSON, Clarence Wilber, 1st Lieut, Pittsburg, Kansas, Corps Area Service Command Station Hospital, Fort Crook, Neb
 FAST, William S, 1st Lieut, Atchison, Kan
 FLICKINGER, Roger R, 1st Lieut, Mason City, Iowa
 FLINN, John Timothy, 1st Lieut, St Louis, Corps Area Service Station Hospital, Fort Leonard Wood, Mo
 GRAY, Herschel Fredrick, 1st Lieut, Little Rock, Ark, 1st Infantry, Fort Leonard Wood, Mo
 HAGAN, Francis J, 1st Lieut, Wichita, Kan
 HAMILTON, Benjamin C, Jr, Major, Jefferson, Iowa
 HAWMOND, Harold E, Captain, Perry, Iowa

HENDERSON, Robert W, Captain, Bismarck, N D
 HOBART, Francis William, Captain, Lake City, Iowa
 HOBBS, Russell E, 1st Lieut, Wichita, Kan
 HOFFMAN, Jacob S, 1st Lieut, Kansas City, Mo
 HOWE, Louis Francis, Captain, Union, Mo, Medical Department Replacement Center, Camp Grant, Ill
 HUBER, Melvin J, Captain, St Louis
 HUGHES, Shelby B, 1st Lieut, Clinton, Mo
 HYNDMAN, Henry H, 1st Lieut, Wichita, Kan
 JEWELL, Iverson H, Lieut, Colonel, Paris, Ark
 JOHNSTON, Thomas S, Captain, Topock, Kan
 LEIFER, William W, 1st Lieut, Kansas City, Mo
 McVAY, Melvin J, Captain, Lake City, Iowa
 MADDUX, William Paul, 1st Lieut, Buffalo, Mo
 MINER, Paul Floyd, 1st Lieut, Laramie, Wyo, 35th Division, Camp J T Robinson, Ark
 MINGE, Raymond Kenneth, 1st Lieut, Clarkfield, Minn
 PLATOU, Ralph V, 1st Lieut, Minneapolis
 POTASHNICK, Robert, 1st Lieut, St Louis, Camp Roberts, Calif
 REED, Charles C, 1st Lieut, Little Rock, Ark
 SETTLE, Emmett B, Captain, Rockport, Me
 SHANDORF, James F, 1st Lieut, Northfield, Minn
 SHELTON, Harold J, Captain, Webster Groves, Mo
 SHEPARD, Walter Lee, 1st Lieut, Pittsburg, Kan
 SICELUFF, Joseph G, 1st Lieut, Springfield, Mo
 SPAFFORD, Allen L, Captain, Oawatomie, Kan
 STEELE, Hugh H, 1st Lieut, Deadwood, S D
 TROW, James Edward, 1st Lieut, Minneapolis
 VAN BESIEEN, George J, 1st Lieut, Decorah, Iowa
 WETRICH, Max Franklin, 1st Lieut, Des Moines, Iowa, 63d Infantry, Fort Leonard Wood, Mo

ORGANIZATION SECTION

WOMAN'S AUXILIARY

Death of Mrs. Red

Mrs. Samuel Clark Red of Houston, Texas, founder of the Woman's Auxiliary to the American Medical Association, died suddenly on August 10. Mrs. Red was the first president of the Auxiliary to the American Medical Association (1922-1923) and was also president for the two succeeding years.

Arkansas

On March 13 Mrs. James Lewis, retiring president of the auxiliary to the Washington County Medical Society, was hostess to members at a dinner bridge; officers for next year were elected as follows: president, Mrs. E. F. Ellis, Fayetteville; vice president, Mrs. R. T. Henry, Springdale; secretary, Mrs. P. L. Hathcock Jr.; treasurer, Mrs. R. H. Huntington. On March 20 the annual City Hospital Shower and Tea was given by the auxiliary. About 100 guests were present and six hundred gifts for the hospital were received. Mrs. Fount Richardson was general chairman of the tea. On March 24 Mrs. James Lewis read a paper before the Business and Professional Woman's Club of Fayetteville at the showing of the picture "Choose to Live," sponsored by the Woman's Auxiliary to the American Medical Association. On March 25 the auxiliary sponsored the same picture with the P. T. A. at the high school auditorium, to which the public is invited.

California

On April 15 the Sacramento auxiliary sponsored a fashion show for juveniles, the models being twenty daughters and sons of the group.

One hundred thirty-three members and guests of the Los Angeles County auxiliary met at the Annandale Golf Club in Pasadena to hear Mrs. Thomas G. Winter of the Motion Picture Producers and Distributors of America talk on "The Pictures and the Political Crisis."

Colorado

The auxiliary to the Denver County Medical Society met April 21 at the Colorado General Hospital nurses' home to hear a dramatization by Jeanette Humphreys of the play entitled "George Washington Slept Here." The members brought their banks for the benefit of cancer control.

Indiana

Dr. Doster Buckner addressed the Allen County medical auxiliary March 18 in Fort Wayne on "Danger in Laity Discussion of Scientific Information." Dr. Jessie Calvin, vice commander in the Woman's Field Army for Cancer Control, talked on "Cancer Control," and Mrs. A. N. Ferguson discussed "The Case of the United States vs. The American Medical Association et al." The auxiliary has arranged to distribute toys in the pediatric wards of Fort Wayne hospitals.

Seventeen members attended the dinner meeting of the auxiliary to the Delaware-Blackford Counties Medical Society in Muncie on March 18. The group recently gave the physicians \$40 to purchase a dictionary for the physicians' library in the Ball Memorial Hospital.

The members from Nappanee planned the program for the meeting on March 6 of the Elkhart County auxiliary. Mrs. Howard A. Bosler, whose husband has been a physician in Nigeria, West Africa, described her experiences as a doctor's wife there. On March 20 the Elkhart County Medical Society was addressed by Dr. Bosler, who gave an account of his work in Nigeria.

The LaPorte County auxiliary held a dinner meeting in Michigan City on March 20. Following the dinner, the discussion of socialized medicine was led by a member of the Michigan City League of Women Voters.

The Madison County auxiliary is proud of the success of its program in which it sponsored a drawing for a prize of \$300

or a trip to Mexico or California, the winner to make his own choice. The funds raised in this way were used for guild purchases of various supplies and equipment for St. John's Hospital.

The Tippecanoe County auxiliary has been experimenting; at each meeting it has a "news flash" of up to the minute news pertaining directly or indirectly to the medical world. This tends to encourage the members to watch for news items to report and is a step toward an informed public. The auxiliary is confining its programs to ones of an educational nature and letting the social part be secondary.

Iowa

The Woman's Auxiliary to the Upper Des Moines Medical Society met at Spirit Lake, July 10. Mrs. W. R. Hornaday of Des Moines, president of the auxiliary to the Iowa State Medical Society, stressed the aims and purposes of the auxiliary, which she cited as being (1) social, (2) a means of contact between the medical profession and laymen and (3) the necessity of having at least one health program annually in each auxiliary. The following officers were elected for the coming year: Mrs. Don F. Rodawig of Spirit Lake, president; Mrs. Paul O. Nelson of Emmetsburg, vice president; Mrs. Andrew I. Reed of Estherville, secretary and treasurer, and Mrs. Elbert E. Munger Jr. of Spencer, ex-committee member from Clay County.

The Woman's Auxiliary to the Dubuque County Medical Society held its annual meeting April 8. Mrs. E. T. Warren, president of the state auxiliary, was guest of honor. Miss Janice Bardill played piano selections.

Wives of physicians met with Mrs. E. T. Warren of Stuart, president of the state auxiliary, April 3 in Jefferson and organized the Woman's Auxiliary to the Greene County Medical Society. The following officers were elected: Mrs. Phillips E. Lohr of Churdan, president; Mrs. Roy E. Parry of Seranton, president-elect; Mrs. Walter E. Chase of Rippey, secretary and treasurer, and Mrs. Laurence C. Hanson of Jefferson, chairman of the Hygeia committee.

North Carolina

The nineteenth session of the Woman's Auxiliary to the Medical Society of the State of North Carolina was held at Pinhurst, Tuesday, May 20. Mrs. Clyde R. Hedrick of Lenoir, president, presided. Dr. Hubert B. Haywood, president of the Medical Society of the State of North Carolina, was guest speaker. The chairman of the committee on research, Mrs. R. S. McGeachy of New Bern, gave a paper on the life of the late Dr. Martin L. Stevens, for whom the bed which the woman's auxiliary will support at Black Mountain Sanatorium is named. The report of the nomination committee was as follows: Mrs. Sidney Smith, Raleigh, president; Mrs. R. A. Moore, Winston-Salem, president-elect; Mrs. C. R. Hedrick, Lenoir, first vice president; Mrs. J. R. Terry, Lexington, second vice president; Mrs. J. S. Hooker, Chapel Hill, third vice president; Mrs. Harry Winkler, Charlotte, corresponding secretary and recording secretary, and Mrs. E. C. Judd, Raleigh, treasurer.

Pennsylvania

The auxiliary of the Westmoreland County Medical Society was addressed May 6 by Dr. W. W. Bauer of Chicago, director of the Bureau of Health Education of the American Medical Association on "The Skin You Love to Retouch." Dr. Bauer had addressed high school students in the morning and the Rotary Club at noon. The auxiliary has given thirty-eight subscriptions of *Hygeia* to schools and libraries in the county during the past year. Miss Ann Carlisle played during the tea; high school girls were aides, Mrs. R. E. L. McCormick of Irwin was chairman of the tea arrangements and Mrs. J. Morgan Meyhew of Greensburg had charge of the program.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH)

ALABAMA

Changes in Health Personnel.—Dr William A. Dodson Jr., Double Springs, has resigned as health officer of Winston County to take a position with the U. S. Public Health Service, it is reported.—Dr William J. Donald, Brewton, has been appointed an associate in county organization in the state department of health, Montgomery, to succeed Dr W. D. Burkhalter, who recently became health officer of Shelby County of Memphis, Tenn.—Dewitt Sterling Abell, M.S., a member of the staff of the North Carolina State Department of Health, has been appointed director of the bureau of sanitation in the Alabama State Health Department.

ARKANSAS

Medical Alumni Officers.—Dr Eugene A. Callahan, Carlisle, was elected president of the Alumni Association of the University of Arkansas School of Medicine, Dr Estes Allen, Little Rock, vice president, Dr Thomas Duell Brown, secretary, and Dr Paul M. Fulmer, Little Rock, treasurer.

District Meeting.—The Ninth Councilor District Medical Society met at the Hotel Seville, Harrison, recently, with the following speakers:

Dr Arthur M. Washburn, Little Rock, Tularemia
Dr Le Roy F. Heimburger, Springfield, Mo., Fungi in Eczematous Dermatitis of the Hands
Dr Walter S. Sewell, Springfield Mo., Diseases of the Prostate
Dr Charles S. Paddock, Fayetteville, Urologic Problems That Daily Confront the Physician
Dr Louis K. Hundley, Harrison, Trichoma in Arkansas

Society News.—The Mississippi County Medical Society was addressed recently by Drs Robert Lyle Motley and Thomas D. Moore, Memphis, on "Indigestion" and "Ureteral Kinks and Strictures" respectively.—Dr James T. Powell, Gravette, discussed podalic version and solution of posterior pterygia before the Benton County Medical Society, June 12, at Gravette.—A joint dinner session of the Sebastian County Medical Society and the Muskogee County (Okla.) Medical Society, June 10, in Fort Smith was addressed by Drs Henry T. Ballantine, Muskogee, on "Anomalies of the Newborn" and Frederic G. Dorwart, Muskogee, "Massive Collapse of the Lung and Pneumothorax."—Drs Francis Walter Carruthers and Paul L. Mahoney, Little Rock, addressed the Southeast Arkansas Medical Society in Crossett, June 16, on "Synovectomy in Knee Joint Conditions" and "Chronic Cough" respectively. Dr Herbert Fay H. Jones, Little Rock, president of the Arkansas Medical Society, also made an address.—Dr Willard W. M. Allen, St. Louis, addressed the Pulaski County Medical Society, June 23, on "Clinical Use of Sex Hormones."

FLORIDA

Annual Postgraduate Course.—The Florida Medical Association and the Florida State Board of Health sponsored their ninth annual short course for physicians in Jacksonville in June. Speakers who gave several lectures each were:

Medicine: Dr Henry M. Thomas Jr., Baltimore
Surgery: Dr Richard B. Cattell, Boston
Obstetrics: Dr Nicholson J. Eastman, Baltimore
Pediatrics: Dr Daniel C. Darrow, New Haven, Conn.
Gynecology: Dr Everett D. Pliss, Iowa City
Venereal diseases: Dr Charles F. Mohr, Baltimore
Military Medicine: Col. Luther R. Poust, Lieut. Col. Bennett G. Owens, Major James A. Coleman, all of Camp Blending, and Comdr. Eben E. Smith, Naval Air Station, Jacksonville.

GEORGIA

Memorial to Dr. E. C. Davis.—Plans to establish a memorial for the late Dr. Edward Campbell Davis in the new Academy Building, home of the Fulton County Medical Society Atlanta, have been announced. Dr. Davis died in 1931. A graduate of the University of Louisville School of Medicine in 1892, Dr. Davis was emeritus professor of obstetrics and gynecology at Emory University School of Medicine, a founder of the Davis-Fischer Sanatorium and, in 1928, president of the Fulton County Medical Society.

ILLINOIS

Family Health Consultations at State Fair.—Family health consultations were a feature of the state fair exhibits of the Illinois State Department of Public Health at the Exposition Building in Springfield, August 9-17. This feature supplanted the discontinued baby conference and consisted of consultation booths open to adults, infants and children of all ages. Trained specialists in public health engineering, nursing, sanitation, preventive medicine, mental hygiene and nutrition were on hand to discuss general health problems with visitors at the fair.

Chicago

Personal.—Dr Samuel M. Feinberg has been elected an honorary member of the Argentine Society for the Study of Allergy.—Mr. Charles A. Wordell, director of St. Luke's Hospital for thirteen years, has resigned to become superintendent of the Hospital for Children, San Francisco, effective September 1.

Dr. McNally Appointed Toxicologist.—Dr William D. McNally, who is said to have been responsible for the establishment of the first laboratory for toxicology in the nation for the Cook County coroner's office in 1913, has again been appointed toxicologist for the county, effective August 11. He succeeds Clarence W. Muehlberger, Ph.D., who has become toxicologist for the state of Michigan. Dr. McNally served as toxicologist and chief chemist of Cook County from 1913 to 1929. He was instructor in chemistry at the University of Illinois from 1905 to 1906, when he went to Armour & Company as chemist. He was chief chemist of the Chicago Department of Health from 1910 to 1913. Since 1923 he has been associate professor of materia medica and toxicology at Rush Medical College. He graduated at Rush in 1920. Dr. Muehlberger had been county toxicologist since 1930. He came from Wisconsin, where he had been state toxicologist since 1923 and assistant professor of pharmacology and toxicology at the University of Wisconsin Medical School, Madison, since 1924. Dr. Muehlberger was toxicologist and assistant director of the Scientific Crime Detection Laboratory at Northwestern University Medical School, 1930-1935 and had held teaching positions at Northwestern, Illinois and the University of Chicago, Department of Medicine.

MASSACHUSETTS

Dr. Beecher Lectures in Bogotá.—The U. S. Department of State awarded a travel grant to Dr. Henry K. Beecher, associate in anesthesia, Harvard Medical School, Boston, to give a series of lectures during June and July at the National University of Colombia at Bogotá, Science reports.

Promotions on Harvard Faculty.—The following promotions on the faculty of Harvard Medical School, Boston, were recently announced, among others:

Donald L. Augustine, M.D., associate professor of comparative pathology and tropical medicine
Dr. William L. Aycock, associate professor of preventive medicine and hygiene
Dr. Harry C. Solomon, clinical professor of psychiatry
Dr. Charles G. Mixer, clinical professor of surgery
Dr. Robert S. Morison, assistant professor of anatomy
Dr. Thomas D. Jones, assistant professor of medicine
Dr. Aubrey O. Hampton, assistant professor of roentgenology
Dr. Arthur T. Hertig, assistant professor of pathology
Dr. Jacob Fine, assistant professor of surgery
Dr. Harold G. Tobey, lecturer on laryngology
Dr. Charles T. Porter, lecturer on otology
Dr. George G. Smith, lecturer in genitourinary surgery

MICHIGAN

New Health Units.—A new city-county health unit has been established in Kalamazoo County under the direction of Dr. Irmel W. Brown, formerly health officer of Kalamazoo, who has returned from a year's study in public health. This is the first city-county unit in Michigan. There are now sixty-five counties in the state with full time public health services and eighteen counties without such protection.

Dr. Francis Named Professor of Epidemiology.—Dr. Thomas Francis Jr., professor of bacteriology and director of the bacteriologic laboratories, New York University College of Medicine, New York, has been appointed professor and head of the department of epidemiology at the new School of Public Health at the University of Michigan, Ann Arbor. Dr. Francis was born in Indiana in 1899. He graduated at Yale University School of Medicine, New Haven in 1925. He was at one time resident physician at the Hospital of the Rockefeller Institute and associate in medicine at the Rockefeller Institute. He has been a member of the staff of the International Health Division of the Rockefeller Foundation since 1936.

OREGON

State Medical Meeting in Portland.—The sixty-seventh annual session and postgraduate assembly of the Oregon State Medical Society will be held in Portland, September 3-6, under the presidency of Dr. Karl H. Martzloff, Portland. Dr. Frank H. Lahey, Boston, President of the American Medical Association, will deliver an address on "Some of the Newer Developments in Medicine and Surgery," and three other guests will give three lectures each as follows:

Dr. George M. Curtis, Columbus, Ohio: Iodine and Calcium Metabolism in Thyroid Disease; Recent Advances in Thoracic Surgery; Recognition and Management of Acute Injury to the Chest.

Dr. Henry J. Tumen, Philadelphia: Diagnosis and Treatment of Jaundice; Management of Patient with Irritable Colon; Clinical and Gastroscopic Features of Chronic Gastritis.

Dr. Milton B. Cohen, Cleveland: Nature of Allergy, Its Pathology and Mechanisms of Its Production; Management of Patients with Asthma, Hay Fever and Other Allergic States; Growth Disturbances Produced by Allergy.

Panel discussions dealing with subjects in medicine, surgery, orthopedics, obstetrics and gynecology, dermatology and syphilology, allergy, psychiatry and radiology are also announced.

RHODE ISLAND

Personal.—Dr. William P. Shields, Providence, has been appointed epidemiologist in the state health department to succeed Dr. Harry B. Neagle, who resigned because of ill health.

—Dr. John E. Donley, Providence, has been named to an eleven member state council of defense by Governor McGrath.

—Dr. Henry A. Jones, Cranston, formerly superintendent of the State Infirmary, Howard, has been appointed assistant to the state director of social welfare.

SOUTH CAROLINA

Personal.—Dr. James C. Brabham, Walterboro, health officer of Colleton County, has been appointed health officer of Laurens and Union counties, succeeding Dr. Henry R. Perkins, Laurens. Dr. Lloyd W. Luttrell, Pickens, has been transferred from the health unit in Pickens County to succeed Dr. Brabham in Colleton County.

Society News.—Dr. James L. Hughes, Greer, among others, addressed the Greenville County Medical Society, Greenville, July 7, on "Borderline Deficiency Diseases."—Dr. William Halsey Barker, Baltimore, addressed the June meeting of the Florence County Medical Society, Florence, on "Uses and Abuses of the Sulfonamide Drugs." Dr. William R. Barron, Columbia, addressed the society, July 8, on "Prostatic Surgery."

VIRGINIA

Faculty Changes at University of Virginia.—Dr. Claude C. Coleman, clinical professor of neurological surgery at the University of Virginia Medical Department, Charlottesville, since 1937, has resigned. His successor will be Dr. William Gayle Crutchfield, Richmond, who has been associate clinical professor since 1937. Dr. John M. Meredith, assistant professor in the department, has also resigned and will now become associate professor of neurological surgery in the Medical College of Virginia, Richmond.

PUERTO RICO

Plan to Treat Rejected Selectees with Venereal Disease.—The director of the bureau of venereal diseases in the Puerto Rico Department of Health, Dr. Ernesto Quintero, San Juan, has recently given instructions to physicians in charge of the department's clinics for collaboration with selective service boards in bringing under treatment all men rejected by the boards because of venereal disease. The director recommends that a procedure be arranged by which health officials will be informed by the boards of all such cases. Treatment is to be offered free to the infected persons; their contacts are to be investigated and treatment also offered to any of those who are found to have venereal diseases. A follow-up system to keep patients under treatment was recommended, with a plan for reporting to the selective service boards any who stop treatment. Dr. Quintero recommended a similar program for workers in defense industries. Finally he urged an intensive educational program among selective service registrants, members of the armed forces and defense workers to keep them out of the hands of charlatans.

GENERAL

Changes in Status of Licensure.—The Board of Medical Examiners of Maryland recently reported the following action:

Dr. Henry L. Fabrney, Frederick, license restored February 11.

The Massachusetts Board of Registration in Medicine announces the following action:

Dr. Manford R. Spalding, Auburn, license suspended, July 11, for deceit in the writing of a narcotic prescription.

The Minnesota State Board of Medical Examiners, St. Paul, announces the following action:

Dr. Samuel R. Fraker, Minneapolis, license revoked, May 9, having pleaded guilty to a charge of performing an illegal operation.

Report on Encephalitis Outbreak.—Newspapers reported on August 13 that at least eighty-four deaths have been attributed to an outbreak of encephalitis in five midwestern states in the last two months. More than 800 persons were ill with the disease. Forty-six deaths and 400 cases were reported in North Dakota since the beginning of the outbreak; Minnesota, twenty-four deaths and 366 cases; South Dakota, ten deaths and 70 cases, and, since July 28, Nebraska, four deaths and Iowa, 10 cases. Four new cases were reported in Winnipeg, Canada, bringing the total of cases in Manitoba this year to 21, with three deaths.

Examinations in Obstetrics and Gynecology.—The American Board of Obstetrics and Gynecology announces that its next examination and review of case histories (part I) for group B candidates will be held in various cities of the United States and Canada on Jan. 3, 1942. Applications for admission to these examinations must be on file in the office of the secretary, Dr. Paul Titus, Pittsburgh, not later than October 1. The general oral and pathologic examinations (part II) for all candidates (groups A and B) will be conducted by the entire board in Atlantic City immediately prior to the 1942 meeting of the American Medical Association. The present fiscal year (1941-1942) marks the close of the two groups of classification of applicants for examination. Thereafter the board will have only one classification of candidates. Information and application blanks may be obtained from Dr. Titus, 1015 Highland Building, Pittsburgh.

Meeting of Railway Surgeons.—The fifty-second annual meeting of the American Association of Railway Surgeons will be held at the Palmer House, Chicago, September 8-10, under the presidency of Dr. Lucien Stark, Norfolk, Neb. The speakers will include:

Dr. Stanley J. Seeger, Milwaukee, Treatment of Burns.

Dr. M. Herbert Barker, Chicago, Chemotherapy—Sulfonamide Group.

Dr. Sumner L. S. Koch, Chicago, Tendon Suturing.

Drs. James E. M. Thomson and Charles F. Perciot, Lincoln, Neb., Fractures of the Patella.

Dr. Spencer Wright, Salt Lake City, Newer Methods for the Repair of Inguinal Hernia.

Dr. Harold Feil, Cleveland, Cardiovascular Disabilities of Railway Employees—Problems of the Consultant: A Review of Eight Years' Experience.

Dr. Elisha S. Gurdjian, Detroit, Management of Traumatic Intracranial Hemorrhage.

Drs. Samuel J. Kopetzky and Ralph Almour, New York, Otoscopy in the Inflammations; A Clinic on Petrositis.

Bureau Plans Medical Aid to China.—The American Bureau for Medical Aid to China recently voted to spend \$228,721 for immediate shipment of medical and other supplies to China. The fund was collected in part by the "Bowl of Rice" parties in California and also includes donations of \$75,000 from the national committee of United China Relief and \$45,000 from the China Emergency Relief Committee. Eight agencies carrying on relief work for China have recently combined with the joint title of United China Relief. Dr. Walter B. Cannon, Boston, is chairman and Donald D. Van Slyke, Ph.D., New York, is vice chairman of the medical division. The money will be used for support of hospitals for rehabilitation of bombed soldiers and civilians, for a first aid station for air raid victims in Chungking, for the emergency training schools for nurses and medical aides, for a medical library needed by the hospitals in their training work and for tools for transport repair shops for the Chinese Medical Relief Corps. Purchases will be made in consultation with the American Red Cross and the China Defense Supplies Commission recently established in Washington. The committee which will direct the expenditures consists of Drs. Frank Wang Co-Tui, chairman; Frank L. McLency and Edward H. Hume, and Mr. Chih Meng. All are of New York.

Foreign Letters

PARIS

(From Our Regular Correspondent)

June 15, 1941.

Epidemic of Scabies

The incidence of scabies has tripled within the last few years. In 1938, 6,194 cases were observed in the Hôpital Saint Louis. This rose to 7,914 cases in 1939 and to 24,664 in 1940. There were three periods of exacerbation, the first among the mobilized, the second in the month of June at the time of massive evacuation of the populace and the third at the return of the evacuated in August.

In 1795, during the French Revolution, military centers of treatment for scabies were organized by decree. It was one of the problems of Napoleon to determine where to evacuate those affected with scabies. The present epidemic has permitted verification of the role which the germ carriers play in the dissemination of sarcoptes. Often a member of a family, to all appearance unaffected himself, by refusing to take precautionary measures spreads the contamination. Pignot pointed out before the Academy of Medicine the need of discovering these apparently innocuous carriers. The present scarcity of soap has had a direct influence on the epidemic. Various treatments have been employed at the Hôpital Saint Louis, such as Helmerich's ointment. However, fats have become so scarce in France that ointments will soon no longer be obtainable.

Wounds of the Head

Piquet and his associates reported recently to the Academy of Surgery their experiences with craniocerebral traumas in May 1940, at the time of the German invasion. Piquet was surgeon in chief of a center for cranial surgery situated on a bank of the LaManche River, a point distant from the combat zone. On May 18 this center found itself suddenly in the midst of a battle, and men with cranial wounds were rushed in. The hospital equipment was limited, and on the 19th electricity failed them. No longer could roentgenography, surgical diathermy or wound aspiration be done. Nor could foreign bodies be located in the wounds. Most of the wounded brought in for treatment had been injured ten days or two weeks previously and had been treated, more or less promptly, in another ambulance. Piquet's center was facing appalling conditions because of the scarcity of personnel and equipment and the pressure of time. The overworked surgeons were practically forced to adopt the surgical measures of the World War. Primary suture was done only on wounded men whose injuries did not date back beyond thirty-six hours. Fortunately, the sulfanilamide supplies were sufficient and massive doses were given. Failures were partly due to the inability to carry out the measures for the discovery of foreign bodies in the brain. Fatalities occurred in one third of the cases; only one third of these could be operated on in less than forty-eight hours after wounding. An additional factor was the need of moving the injured to make room for others. Piquet believes that foreign bodies in the brain should be removed as speedily as possible. This should be followed by prompt surgical intervention, done in one stage.

Technic for Determining Bactericidal Power of Blood

Bécard and Lepeut recently described before the Society of Medicine of Paris a simplified method for determining the bactericidal power of the blood. Blood specimens are obtained by digital puncture. No citrate is added. From a mother dilution representing a titer of 25,000,000 micro-organisms decimal dilutions in concentration ratios of 1, 10, 100 and 1,000 are prepared. These decimal dilutions are placed in four tubes and carefully mixed by shaking. By means of a graduated

pipet a drop of the blood to be examined is deposited in each of the tubes and the latter incubated for thirty minutes at normal temperature (37 C.). Four different areas of the culture medium are inoculated with a drop of the dilution in a Petri dish containing peptonized agar-agar and incubated for twelve hours at normal temperature. The colonies of each area are then counted with a magnifying glass. The results are recorded in a diagram on which normal dilution figures (15, 150, 1,500, 15,000) are given on the abscissas and the bacterial count obtained from the colonies on the normal ordinates. The results are inscribed on the right or the left of the line representing the meeting place of abscissas and normal ordinates, the right indicating microbial decrease and hence a positive bactericidal power, the left indicating the opposite. The authors believe that by means of their diagram useful conclusions can be rapidly drawn regarding the surgical intervention proposed, the indications for immunotransfusion and in regard to the blood donors whose blood is highly bactericidal in view of the immunotransfusion.

Cold and Undernourishment

F. Bezançon discussed before the Academy of Medicine the dangers of undernourishment as it is affected by cold. The problem of heat regulation involves that of chemical thermoregulation and, in man, that of the peripheral circulation. Adaptation of the caliber of the blood vessels to the activity of their thermal functions varies in individuals. Urban dwellers who are not as extensively exposed to all the variations of outside temperatures lack good defense reflexes. Under the influence of cold, it is necessary for warm blooded animals to triple and quadruple the calory supply. The thermometric descent from 59 to 32 F. requires, for example, in the rat a tripling of the metabolism in relation to its basal metabolism. Aids in the process consist in shivering, in the chemical regulation of the body and in the support which the liver, the glands and the cells contribute. In human beings dwelling in our climate who do not modify a great deal the protective nature of their clothes, the thermal adjustment varies from 1,810 calories in summer to 3,000 calories with the arrival of cold.

Certain foods possess nutritional value against cold. Proteins, fats and carbohydrates may be substituted for one another to a certain extent; yet a vital minimum of each of these is indispensable. This involves the problem of equilibrium. Diets must contain protein, fat, mineral salts and amino acids. Individual physiologic differences as well as differences in the surrounding environment such as dryness, winds and sunshine are frequent. The frequent occurrence of chilblains during the recent severe cold demonstrated the role which food imbalance plays, for milk and butter are almost lacking at present in the French diet. Undernourishment, coupled with dietary imbalance, is particularly prejudicial to tuberculous persons in the developmental stage or with pneumothorax and to those affected with grave anemia. Physicians are now authorized to demand increased food allocations for persons with these disorders.

Psittacosis

Psittacosis has made its appearance in the Paris area. Fearing that the disease might spread, the public health department has made it notifiable. Psittacosis was first reported in Europe in 1930. The importation of parrots to France was prohibited at the time, and the bird shops were subjected to special inspections. In spite of these precautions, psittacosis did not altogether disappear. Isolated cases were encountered every year. Epidemiologic inquiries showed that these were due to the contamination of native breeding places. The source of these sporadic infections could not be traced, but it is now well

known that interhuman contamination is quite frequent. Diagnostic methods have been developed, but physicians in general often confuse the manifestations of psittacosis with those of influenza. Sacquépée, discussing this subject before the Academy of Medicine, believes that, if diagnosis was more searching, more cases of psittacosis would be found.

Congenital Dilatation of the Pulmonary Artery

Laubry and Routier recently reported to the Academy of Medicine their findings in 39 cases of a condition which they regard as congenital dilatation of the pulmonary artery but which Cossio of Buenos Aires had described clinically and roentgenologically as interauricular communication. Eight of their cases came to necropsy. The symptomatology is diverse, yet the roentgenologic signs are constant enough and similar to those disclosed in the roentgenogram to permit grouping them together. The description of the roentgenologic silhouette shows a significant right border, an arc of average projection, strongly expansive pulmonary hilus shadows and a smaller invisible aortal semicircle. Clinically, diastolic and systolic murmurs were noted. Functional signs, especially cyanosis, were delayed. The evolutionary trend was generally toward bronchial dilatation, to chronic emphysema with thoracic blockage or toward pulmonary tuberculosis.

RIO DE JANEIRO

(From Our Regular Correspondent)

June 15, 1941.

Cardiovascular Diseases in Rio de Janeiro

The cardiovascular diseases offer considerable difficulty in an appraisal of their importance, because many of the factors involved are ignored. In Rio de Janeiro exact studies on the incidence of these diseases have been lacking, though mortality statistics have been kept since 1903, which year marked the beginning of the modern era of public health in Brazil. Publication of the mortality data for the last fifteen years has shown that deaths from cardiovascular diseases increased from 9.41 per cent of the deaths from all causes in the period 1926-1930 to 11.37 per cent in the period 1936-1940, and the crude specific death rate similarly increased from 165 to 189 per hundred thousand of population, an increase of 14.54 per cent.

More interesting is the study of the morbidity by Prof. Pedro Da Cunha of the Fluminense Medical School and the Gaffrée-Guinle Hospital, relating to 40,186 people attending the outpatient clinic of that hospital from 1926 to 1939. Of this total, 32,830 patients, or 81.70 per cent, were classified as afflicted by diseases of the cardiovascular system. The patients were 37.74 per cent male and 62.26 per cent female, 80.17 per cent of Brazilian nationality and 19.83 per cent foreign, 64.16 per cent white and 35.89 per cent Negro, 31.26 per cent single, 54.74 per cent married and 14.00 per cent widowed and divorced, 7.68 per cent under 20 years of age, 76.99 per cent between 20 and 49 and 16.43 per cent 50 years and over. The aneurysms are only 0.40 per cent of the grand total. Some features of the study need emphasis. Essential hypertension has been found in only 0.29 per cent of the cases and hypotension in 0.45 per cent. Syphilis was the cause of cardiovascular disease in 24 per cent of the patients, and in about two thirds the specific lesion was in the aorta. Syphilis was much more frequent as a cause of valvular diseases than rheumatic conditions. The ratio between syphilis and rheumatism is about 2:1 for the aortic lesions and about 1:1 for the mitral lesions. The Wassermann reaction was positive in 24.95 per cent of the cases of aortic lesions and in 22.75 per cent of the mitral lesions. Rheumatic conditions alone were found in 10.80 per cent of the cases, and in 2.20 per cent associated with syphilis. As a probable explanation, Rio de Janeiro has a tropical climate, where rheumatic diseases are rather rare and syphilis is very prevalent.

It is interesting to note at the same time the principal features of a report by Dr. Amadeu Fialho, pathologist of the public health laboratory of the city, on the results of 3,474 necropsies in which 890 cases of cardiovascular diseases were found. Of the 890 deaths attributed to cardiovascular diseases, atherosclerosis accounted for 322 cases, cardiac hypertrophy for 168, diseases of the pericardium for 81, syphilitic aortitis for 70, valvular diseases for 69, endocarditis for 63, aneurysm of the thoracic aorta for 40 and sclerosis of the myocardium for 10.

Still another contribution on the subject is that of Drs. Aloysio De Paula and Francisco Benedetti, who examined, in the Health Centers of Rio de Janeiro, 28,293 office and shop employees with the use of the miniature roentgenogram and found unknown cases of heart disease in 0.8 per cent, and unknown aortic disease in 3.9 per cent.

Marriages

CHARLES WHITE MILLENDER, Asheville, N. C., to Miss Dorothy Thompson Aiken of Columbia, Tenn., recently.

WILLIAM CHESTER, Mamaroneck, N. Y., to Miss Anne Mitsak of Bridgeport, Conn., in New York, May 24.

JOHN MILTON STRAIT JR., Columbus, Ohio, to Miss Anne Louise Ferguson of Mount Vernon, June 19.

ROBERT McCLELLAN JAMES, Louisville, Ky., to Miss Lois Livingston of Hazard in Covington, June 14.

ALVA DUCKETT DAUGHTON, East Falls Church, Va., to Miss Vera Alice Hanson of Richmond, July 18.

HAROLD RAWLING PRATT-THOMAS to Miss Mary Porcher Douglas, both of Charleston, S. C., July 2.

GEORGE ASHBY WINSTEAD to Miss Jacqueline Gainer Denson, both of Rocky Mount, N. C., June 17.

FRANCIS PATRICK O'LINN, Youngstown, Ohio, to Miss Margaret Ellen Rataiczak of Troy, June 28.

JOHN WASHINGTON CLARK, Front Royal, Va., to Miss Sallie McArthur Mason of Ridgeway, June 24.

MAURICE J. SMALL, Parsons, W. Va., to Miss Sylvia Cantor of New Rochelle, N. Y., March 25.

WILLIAM CARLETON SMITH, Lockhart, Texas, to Miss Maybell Hardie of Fort Worth recently.

WALDEMAR RICHARD AGRICOLA to Miss Virginia Berry, both of Newcomerstown, Ohio, in July.

NORMAN DOUGLAS ELLIS JR., Martin, S. C., to Miss Martha Alice Bennett of Dillon, June 28.

BENJAMIN FRANKLIN HOOPES, Bloomington, Ill., to Miss Frances Kelly of Chicago recently.

SAMUEL JOSEPH CAMPBELL, Bucyrus, Ohio, to Miss Dorothy Isabel Cole in Fremont, June 21.

WILLIAM ST. JULIEN JERVEY to Miss Susan Amelia Sprague, both of Tryon, N. C., June 30.

WILLIAM HENRY BANDY, Lincolnton, N. C., to Miss Pauline Pope of Linwood, June 21.

HUGH I. CONN, Newman, Ill., to Miss Virginia Thompson at Danville, Ind., June 12.

RUSSELL C. LONG, Zanesville, Ohio, to Miss Isabel Hepler of Mount Vernon in June.

GILBERT THOMAS RANSOM to Mrs. Robley Wilson, both of Fairfield, Ill., in June.

HARLIN G. KNIERIM, Detroit, to Miss Florence Stevens of Galion, Ohio, recently.

ABRAHAM W. FELDMAN to Miss Minerva Shapiro, both of Chicago, August 10.

SOL L. LOWENSTEIN to Miss Corinne Cohn, both of Nashville, Tenn., July 2.

STANLEY H. MACHT, Crewe, Va., to Miss Naomi Newman of Danville, July 1.

PAUL AXTELL BUNN, Cleveland, to Miss Elizabeth Maxwell of Akron, June 14.

Deaths

John Price Crozer Griffith * Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1881; emeritus professor of pediatrics at his alma mater and the *Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania*; member of the American Pediatric Society; for many years treasurer of the Association of American Physicians; past president of the Philadelphia Pediatric Society; corresponding member of the Société de pédiatrie de Paris; served at various times and in various capacities on the staffs of St. Christopher's Hospital for Children, Children's Hospital, Women's Hospital, Jewish Hospital, Abington (Pa.) Memorial Hospital, Misericordia Hospital and the Babies Scares Hospital; author of several volumes on children's diseases; aged 85; died, July 28, at his summer home in Devon.

Edward Frankel Jr. * New York; Columbia University College of Physicians and Surgeons, New York, 1905; instructor in otolaryngology at his alma mater from July 1, 1930 to June 30, 1932; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; past president of the American Stomatological Association; veteran of the Spanish-American and World wars; on the staffs of the Broad Street Hospital and the Presbyterian Hospital; associate editor of the *Journal of Dental Research* from 1932 to 1937; aged 60; died, July 3, of embolism following an appendectomy.

Frederick Eugene Hopkins * Springfield, Mass.; University of the City of New York Medical Department, 1884; member of the American Laryngological Association and the American Laryngological, Rhinological and Otolological Society; past president of the New England Otolological and Laryngological Society; fellow of the American College of Surgeons; for many years member of the school committee; at various times on the staff of the Springfield Hospital, Noble Hospital, Westfield and the Memorial Hospital, Brattleboro, Vt.; aged 83; died, July 1, of cerebral embolism and hypertrophy of the prostate.

Edmund Sheppard Ferguson * Oklahoma City; Detroit College of Medicine, 1895; emeritus professor of ophthalmology at the University of Oklahoma School of Medicine; one of the founders and past president of the Oklahoma City Academy of Medicine; past president of the Oklahoma State Medical Association; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; on the staffs of St. Anthony's, Wesley and Oklahoma City General hospitals; aged 70; died, June 28, of coronary occlusion.

Frank Everett Kittredge * Nashua, N. H.; University of Pennsylvania Department of Medicine, Philadelphia, 1885; member of the American Academy of Ophthalmology and Otolaryngology and American Laryngological, Rhinological and Otolological Society; past president of the New England Otolological and Laryngological Society; fellow of the American College of Surgeons; on the staffs of St. Joseph's and Nashua hospitals; aged 79; died, July 8, of heart disease in Newfoundland while on a fishing trip.

Caspar W. Sharples * Seattle; University of Pennsylvania Department of Medicine, Philadelphia, 1888; member of the Pacific Coast Surgical Association and past president of the North Pacific Surgical Association; fellow of the American College of Surgeons; past president of the city school board; past president of the Washington State Medical Association; on the staff of the Children's Orthopedic Hospital; aged 75; medical superintendent of the Seattle General Hospital, where he died, July 15.

William Hurley Strietmann * Oakland, Calif.; Medical College of Ohio, Cincinnati, 1905; at one time instructor in obstetrics and demonstrator of physiology at his alma mater; fellow of the American College of Physicians; past president of the Alameda County Medical Society; member of the Alameda County Institutions Commission; chairman of the medical department of the Alameda County Hospital; on the staff of the Peralta Hospital; aged 60; died, July 14, of coronary disease.

George Kingsley Olmsted * Denver; Denver and Gross College of Medicine, 1903; past president of the state board of health; fellow of the American College of Physicians; on the staffs of the Denver General and St. Luke's hospitals; lieutenant colonel, medical reserve corps, United States Army, retired; aged 69; died, June 25, in St. Luke's Hospital of coronary thrombosis and diabetes mellitus.

Willard Clifton Hearin, Greenville, S. C.; Medical Department of Tulane University of Louisiana, New Orleans, 1910; member of the South Carolina Medical Association and the South Atlantic Association of Obstetricians and Gynecologists; past president of the Greenville County Medical Society; served during the World War; aged 54; died, July 9, in St. Francis Hospital of angina pectoris.

John Bell, New Glasgow, N. S., Canada; McGill University Faculty of Medicine, Montreal, Que., 1898; for many years secretary of the Pictou County Medical Association; for many years a member of the legislative council of Nova Scotia; on the staff of the Aberdeen Hospital; aged 65; died, May 27, in the Victoria General Hospital, Halifax.

John Purney, New Britain, Conn.; Baltimore Medical College, 1906; member of the Connecticut State Medical Society; served with the Canadian Army during the World War; on the staff of the New Britain Hospital; aged 62; died, July 18, of coronary thrombosis while on his vacation in Shelburne, Nova Scotia, Canada.

Rollin M. Pelton, Richford, Vt.; University of Vermont College of Medicine, Burlington, 1888; member of the Vermont State Medical Society; for many years member of the school board and health officer; formerly member of the state legislature; aged 75; died, June 4, in the Mary Fletcher Hospital, Burlington, of arteriosclerosis.

Aaron A. McKelvey, Van Buren, Ark.; Arkansas Industrial University Medical Department, Little Rock, 1894; member of the Arkansas Medical Society; formerly a member of the Veterans Administration; city and county health officer; aged 74; died, May 21, in a hospital at Fort Smith of heart disease.

Bernard Rubenstein * Dallas, Texas; Baylor University College of Medicine, Dallas, 1922; assistant professor of clinical gynecology at his alma mater; fellow of the American College of Surgeons; on the staffs of the Parkland and Baylor hospitals; aged 51; died, June 12, of coronary occlusion.

John Glasscock Tye, Barbourville, Ky.; University of Louisville Medical Department, 1909; member of the Kentucky State Medical Association; member of the board of health; aged 60; died, June 21, in the Kentucky Baptist Hospital, Louisville, of carcinomatosis.

John Edward Lawrence Walsh, Evanston, Ill.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1886; Rush Medical College, Chicago, 1887; aged 79; died, July 1, in St. Luke's Hospital, Chicago, of coronary thrombosis and carcinoma of the stomach.

Cleal Giles Hissong, Hamler, Ohio; Eclectic Medical College, Cincinnati, 1915; member of the Ohio State Medical Association; mayor; served during the World War; member of the board of education; aged 50; died, June 29, of coronary thrombosis.

Chauncey Goodrich Wright, St. Louis; Washington University School of Medicine, St. Louis, 1905; member of the Missouri State Medical Association; served during the World War; aged 67; died, June 10, in the Missouri Baptist Hospital.

Thomas Gibson, Kingston, Ont., Canada; University of Edinburgh Faculty of Medicine, Scotland, 1894; professor of the history of medicine, Queen's University Faculty of Medicine; aged 75; died, July 2, in the Kingston General Hospital.

Bertha Wagner Stark, Los Angeles; Hahnemann Medical College of the Pacific, San Francisco, 1895; College of Physicians and Surgeons of San Francisco, 1901; aged 76; died, June 28, in San Bernardino of acute dysentery.

Jacob Moon Anderson, Sardis, Miss.; Memphis (Tenn.) Hospital Medical College, 1898; member of the Mississippi State Medical Association; town health officer; past president of the school board; aged 71; died, July 8.

Joseph Fulgence Archambault, West Warwick, R. I.; College of Physicians and Surgeons, Baltimore, 1905; member of the Rhode Island Medical Society; aged 60; died, June 26, in Bridgton, Maine, of coronary thrombosis.

John Lewis Bishop, Niagara Falls, N. Y.; University of Buffalo School of Medicine, 1903; served during the World War; formerly city health officer; aged 64; died, June 10, in the Memorial Hospital of coronary sclerosis.

Josie C. Kennedy Diederich, Rochelle, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1901; member of the Illinois State Medical Society; aged 68; died, June 7.

Clifford Sater, Cincinnati; Miami Medical College, Cincinnati, 1901; served during the World War; aged 70; died.

June 28, in San Diego, Calif., of hypostatic pneumonia, diabetes mellitus and fracture of the femur.

Frank William Knittel @ Brunswick, Ohio; St. Louis University School of Medicine, 1928; on the staff of the Community Hospital, Berea; aged 40; died, June 26, of injuries received in an automobile accident.

John Whitworth Harrison, Kansas City, Mo.; Medical Department of Tulane University of Louisiana, New Orleans, 1899; veteran of the Spanish-American War; aged 64; died, June 10, of chronic myocarditis.

William Henry Haines, Audubon, N. J.; Jefferson Medical College of Philadelphia, 1912; served during the World War; for many years member of the city board of health; aged 55; died, July 5, of heart disease.

Hjalmar V. Barclay, Corona, N. Y.; University of the City of New York Medical Department, 1893; aged 81; died, June 23, in the Roosevelt Hospital, New York, of arteriosclerosis and heart disease.

Joseph Alan Corson, Wilkes-Barre, Pa.; Jefferson Medical College of Philadelphia, 1921; member of the Medical Society of the State of Pennsylvania; aged 46; died, May 25, of cerebral hemorrhage.

James Clair Ash, Lake Andes, S. D.; Barnes Medical College, St. Louis, 1899; member of the South Dakota State Medical Association; formerly member of the state legislature; aged 70; died in July.

Albert C. McClanahan @ Los Angeles; Rush Medical College, Chicago, 1889; member of the Colorado State Medical Society; aged 76; died, June 15, at Santa Barbara, Calif., of coronary thrombosis.

U. S. Grant Sparks, Pitman, N. J.; Medico-Chirurgical College of Philadelphia, 1895; aged 68; died, May 26, in the New Jersey State Hospital, Trenton, of coronary occlusion and arteriosclerosis.

Constantine A. Carusos, New York; National University of Athens School of Medicine, Greece, 1902; aged 58; died, June 8, in Tarpon Springs, Fla., of cerebral hemorrhage and heart disease.

Fred Hugh Van Tassell, Oakland, Calif.; University of California Medical Department, San Francisco, 1904; aged 62; died, June 29, in the Berkeley (Calif.) Hospital, of cerebral hemorrhage.

Fred Clark Taylor @ Peru, Ill.; Medical College of Indiana, Indianapolis, 1894; aged 68; on the staff of the People's Hospital, where he died, June 29, of peritonitis following an operation.

Dallas Curtice Johnson, San Antonio, Texas; University of Texas School of Medicine, Galveston, 1926; served during the World War; aged 43; died, June 24, of pulmonary tuberculosis.

George Byron Walrath, Los Angeles; University of Southern California College of Medicine, Los Angeles, 1895; aged 75; died, June 20, of carcinoma of the pyloric end of the stomach.

Thomas Ives Byrne, Yarmouth, N. S., Canada; Bellevue Hospital Medical College, New York, 1894; for many years deputy minister of health of Nova Scotia; aged 67; died, May 29.

George Augustus Porter Boulden, Staten Island, N. Y.; Long Island College Hospital, Brooklyn, 1897; aged 78; died, May 12, in Montgomery township, N. J., of chronic myocarditis.

Ernest Franz, Berne, Ind.; Hahnemann Medical College and Hospital, Chicago, 1893; member of the Indiana State Medical Association; aged 76; died, June 27, of cerebral hemorrhage.

Felton D. Watts, Portland, Ore.; Detroit College of Medicine, 1904; member of the Oregon State Medical Society; aged 75; died, June 17, of coronary occlusion and hypertension.

Charles Anthon Walters, Santa Fe, Tenn.; University of Tennessee Medical Department, Nashville, 1896; served during the World War; aged 70; died, June 10, of myocarditis.

Thomas James Gallagher, Paterson, N. J.; Temple University School of Medicine, Philadelphia, 1923; aged 47; died, June 30, in St. Joseph's Hospital of coronary occlusion.

Abel W. Truesdell, Lake Orion, Mich.; Saginaw (Mich.) Valley Medical College, 1902; for many years health officer; aged 83; died, June 28, of carbolic acid taken accidentally.

Edward Lipman Efroymsen, Bell, Calif.; Indiana University School of Medicine, Indianapolis, 1935; aged 30; died, June 12, of an overdose of a sedative, self administered.

George L. Brooks @ Chicago; Chicago Homeopathic Medical College, 1901; on the staff of the Chicago Memorial Hospital; aged 62; died, July 2, of coronary occlusion.

Raymond James Stoup @ Syracuse, N. Y.; Syracuse University College of Medicine, 1900; aged 63; died, June 11, in the University Hospital of myelogenous leukemia.

John Wesley Newlove, Los Angeles; Detroit College of Medicine, 1902; served during the World War; aged 61; died, June 29, of cirrhosis of the liver and edema.

William Rice Silverstein, Bradley Beach, N. J.; Baltimore Medical College, 1903; aged 58; died, June 21, in the Beth Israel Hospital, Newark, of cholelithiasis.

Bertha Olive Anderson @ Pittsfield, Mass.; University of Kansas School of Medicine, Kansas City, Kan., 1911; aged 58; died, June 25, of coronary thrombosis.

Gustav Baar, Portland, Ore.; Medizinische Fakultät der Universität Wien, Austria, 1897; aged 68; died, July 6, of hypertensive cardiovascular disease.

John Henry Weckel, Syracuse, N. Y.; University of the City of New York Medical Department, 1879; aged 83; died, June 30, of cerebral hemorrhage.

John J. Johnson, Harrison, Ark.; Marion-Sims College of Medicine, St. Louis, 1896; member of the Arkansas Medical Society; aged 80; died in June.

Calbert H. Beach, Glencoe, Okla.; Missouri Medical College, St. Louis, 1889; Barnes Medical College, St. Louis, 1898; aged 79; died, May 15.

Ella Pearson Sumner, Hastings, Neb.; Omaha Medical College, 1895; member of the Nebraska State Medical Association; aged 94; died, June 10.

James M. Tyson, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1892; aged 79; died, June 13, of cerebral thrombosis.

Michael Joseph Donovan, Perry, Iowa; John A. Creighton Medical College, Omaha, 1907; aged 68; died, June 12, of coronary thrombosis.

Harvey James Clements @ Salem, Ore.; New Orleans University Medical College, 1892; aged 72; died, June 25, of coronary occlusion.

Thomas P. Mitchell, Lincolnton, Ga.; University of Georgia Medical Department, Augusta, 1887; aged 88; died, April 9, of mitral insufficiency.

William Wallace Aldrich, Wevertown, N. Y.; Dartmouth Medical School, Hanover, N. H., 1878; aged 87; died, June 24, of arteriosclerosis.

Hubert Adolphus Thomas, Princeton, Ky.; Meharry Medical College, Nashville, Tenn., 1930; aged 41; died, June 17, of acute endocarditis.

Ralph Milburn Burton @ Toledo, Ohio; University of Louisville (Ky.) School of Medicine, 1925; aged 41; died, June 23, of carcinoma.

William H. Buchan, Gilmer, Texas; Memphis (Tenn.) Hospital Medical College, 1902; aged 63; died, June 2, of chronic nephritis.

Laurence Victor Croft, London, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1903; aged 64; died, May 19.

John Donald Stewart, Calgary, Alta., Canada; McGill University Faculty of Medicine, Montreal, Que., 1911; aged 56; died, May 23.

Ernest Sullivan, Oklahoma City; Barnes Medical College, St. Louis, 1907; aged 59; was found dead in bed, June 1, of heart disease.

Mark Hilton Moore, Athens, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1903; aged 68; died, May 26.

Frederick E. Dillenbeck, El Dorado, Kan.; University Medical College of Kansas City, Mo., 1896; aged 74; died, June 5.

Douglas Hart, Montgomery, Ind.; Louisville (Ky.) Medical College, 1891; aged 80; died, July 1, of carcinoma of the face.

Squire H. Redmon, Tipton, Mo.; St. Louis Medical College, 1880; aged 87; died, May 7, of chronic interstitial nephritis.

Albert David Faust, Bala-Cynwyd, Pa.; Jefferson Medical College of Philadelphia, 1894; aged 69; died, June 9.

Linton S. Archer, Atlanta, Ga.; Maryland Medical College, Baltimore, 1908; aged 57; died, July 4.

Bureau of Investigation

THE MACHINE AGE MOVES IN ON SEX Contraption Promoted as Sexual Cure-All Declared Fraudulent

For many years mechanical devices and nostrums have been the subjects of United States Post Office fraud orders. During recent years this department of THE JOURNAL has given little space to what, for want of a better term, are called "sex frauds"—that is, those devices and "cures" promoted solely for the treatment of imaginary or real sexual deficiencies.

Now the Post Office Department has issued a fraud order against a concern which promoted a mechanical device like something out of Dr. Seuss or Rube Goldberg. Under the names Grindley and Company and Matrimonial Body Support Company, Missoula, Mont., one Thomas C. Grindley advertised and sold through the mails a booklet entitled "A Positive Solution to Many of the Problems of Coitus in Married Life." The memorandum of charges served by the Post Office Department on Mr. Grindley alleged that the following pretenses, representations and promises were false and fraudulent: That the booklet correctly advises how to restore "strength, pep, vitality and endurance" to sexually weak men, regardless of age or physical condition; that it advises how effectively to correct "premature ejaculation"; that it correctly advises purchasers how to continue the sexual act with perfect satisfaction for an hour or more and maintain an erection of the male sexual organ during that time; that the booklet correctly advises purchasers how to retard the climax of the sexual act as long as desired "without fatigue," and how to perform the sexual act "as often as desired" and leave the user "fresh as a daisy afterward"; further, that it advises how to prevent "frigidity" in women and furnishes effective information on "birth control."

Examination of the text of the booklet shows that the results mentioned were to be obtained by the construction of a device designed to support the weight of the male during the act of coitus. This extraordinary construction was to be made by the purchasers of the booklet according to the specifications set forth in the last four pages. According to the fraud order, "it consists of two metal braces, to be placed approximately two feet apart, connected by a metal rod, suspended from which is a heavy canvas or linen upon which the body of the male is to be placed during the act of sexual intercourse. For those who do not wish to make their own support as described in the booklet, the promoter offers to make one and furnish the same for prices ranging from \$3.50 to \$4.00."

Also included in the booklet are the following directions:

HOW TO USE

Be sure that the cross or tie bar marked "O" clears the body of the woman by at least one inch (below the breasts) when the entire weight of the man is upon the support.

Next get into position and adjust the edge of the fabric support so that it is just above the woman's pelvis, and supports the entire abdomen of the man.

Then tilt the fabric support so that the man's weight is barely raised off the woman's abdomen. One adjustment is generally final.

Do not cut down the strength of the materials suggested. The support has to be strongly made. Use 10 ounce canvas or very strong linen, re-enforced to make fabric support.

The picture of the human animal endeavoring to propagate the species while at the same time manipulating this combination hoist and viaduct is something that startles the imagination. Expert testimony of government witnesses was nevertheless apparently necessary to show the wide variety of etiologic factors of the various disorders which this device was claimed to correct. It was so obviously a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises that the Solicitor recommended that a fraud order be issued. The Acting Postmaster-General on April 30, 1941 issued Order No. 15486 against Grindley and Company, the Matrimonial Body Support Company and their officers and agents as such.

Correspondence

HEMOGLOBIN-RED BLOOD CELL RATIO

To the Editor:—In an article entitled "A Simple Hemoglobin-Red Blood Cell Ratio to Replace the Color Index" (THE JOURNAL, May 17, p. 2258) Isaacs criticizes the value of the color index figure of the blood. He states: "However, the lack of single 'normal' figures for the percentage of hemoglobin and red blood cell counts, as well as the differences in males and females, has always made the number somewhat arbitrary. With the advent of hemoglobinometers in which 100 per cent corresponds to 13.5, 14, 15.6 or 17 Gm., the problem is further complicated by the difference in readings of the percentages."

These statements indicate that Isaacs' method of determining the color index does not conform to that commonly employed, and because it may lead to further confusion the statements should be corrected. The color index is determined by dividing the percentage of the normal hemoglobin value calculated from the hemoglobin reading obtained by the percentage of the normal erythrocyte level calculated from the erythrocyte count obtained. Consequently it makes no difference whether the patient is male or female or what number of grams of hemoglobin corresponds to 100 per cent on the hemoglobinometer reading.

It is true that there is some slight divergence of opinion in regard to what the normal hemoglobin and erythrocyte levels are for male and female patients and at various ages, but these differences will affect the final calculation little. If one assumes that the average normal hemoglobin and erythrocyte levels are 15.5 Gm. and 5,200,000 for males and 14.5 and 4,800,000 for females, one may readily see that the normal color index in each case is 1; that is, 100 per cent/100 per cent = 1. In each case, each figure represents 100 per cent of normal irrespective of the sex or, in the case of the hemoglobin figures, what amount of hemoglobin corresponds to 100 per cent on the scale used.

To illustrate, using Isaacs' figures: 9.3 Gm. of hemoglobin is 60 per cent of the normal male ($9.3/15.5 \times 100 = 60$ per cent) and 64.2 per cent of the normal female ($9.3/14.5 \times 100 = 64.2$ per cent) hemoglobin; 2,800,000 erythrocytes per cubic millimeter is 53.8 per cent of the normal male ($2,800,000/5,200,000 \times 100 = 53.8$) and 58.4 per cent of the normal female ($2,800,000/4,800,000 \times 100 = 58.4$) erythrocyte level. Therefore, $60/53.8 = 1.11$ color index for the male and $64.2/58.4 = 1.10$ color index for the female. To carry the calculations further, Isaacs uses the same erythrocyte level with 7 Gm. of hemoglobin. Calculations made in the same manner show color index values for the male $45.2/53.8 = 0.84$ and for the female $48.2/58.2 = 0.83$. It is obvious from these figures, readily computed on the slide rule, that in the first example the color index is approximately 1, whereas in the second example it is below normal, indicating an iron deficiency whether or not the patient is male or female and without reference to the percentage reading obtained from the hemoglobinometer used. This is an excellent example of the desirability of reporting hemoglobin values in grams rather than in percentage unless the number of grams represented by 100 per cent is stated. When this is done, there should be no confusion in regard to the hemoglobin content or the color index figure in any specimen of blood. Present day means available for determining the hemoglobin and erythrocyte levels are far superior to those in use a few years ago, so that greater accuracy is possible, thus making the color index figure a much more reliable and valuable one than it was a few years ago.

WILLIAM P. MURPHY, M.D., Boston.

[NOTE.—The preceding letter was referred to Dr. Isaacs, who replies:]

To the Editor:—Dr. Murphy assumes that the average "normal" hemoglobin and erythrocyte levels are 155 Gm and 5,200,000 for males and 145 Gm. and 4,800,000 for females. This illustrates my point exactly and demonstrates just what I wished to avoid. These standards of normal (1) are purely arbitrary and (2) differ with different workers and authors and in different parts of the country. I certainly agree with Dr. Murphy that the reporting of hemoglobin in grams is more desirable than in percentage, and my formula was merely a way by which a physician without a slide rule could get a mental image of whether the number of grams was high, low or comparable to the changes in the individual patient's red blood cell count. It is easy to multiply the number of grams of hemoglobin by 3 and see whether this number is higher than, equal to or lower than the first two figures of the red blood cell count.

RAPHAEL ISAACS, M.D., Chicago.

PRESCRIPTION OF SULFONAMIDES

To the Editor:—Do you not think a warning on the unjustifiable, promiscuous and indiscriminate prescribing of the sulfonamides in an effort to curb such unwarranted practice might be timely and perhaps serve a good purpose?

A few years ago at a general medical meeting I was the only otolaryngologist of three present who spoke against such practice. The other two and many general practitioners said that they prescribed sulfonamide derivatives as a routine in the home in every case of acute suppurative otitis media. I decried it then, and all the more do I do so now after two years have passed and I have seen the results.

Only yesterday I had a typical example of their misuse—and this is not an isolated case: A woman aged 20 had acute suppurative otitis media with a spontaneous perforation on June 15, 1941. The next day her otologist placed her on sulfanilamide 2 tablets every four hours for twenty-five doses. The ear discharged freely for about two weeks and then stopped, with return of the otalgia. Her otologist performed a myringotomy, following which the ear again discharged freely until July 13, when it stopped with return of pain, and when I saw her for the first time on the evening of July 15 she had advanced acute mastoiditis. I did a mastoidectomy on her the next day. The whole mastoid was filled with pus and granulations, and there was a small fistula through the outer table. Necrosis of the bone was far advanced and the dura was exposed and bathed in pus. It was evident that mastoiditis had existed for some time, the symptoms masked by sulfanilamide, and if it had not perforated through the outer mastoid wall meningitis, an extradural abscess or a septic sinus thrombosis would have developed all unsuspected.

For the more than thirty years during which I have practiced otology before the advent of the sulfonamides I have seen 80 per cent of patients with acute suppurative otitis media get well without chemotherapy. If sulfanilamide is used, it should be saved for those patients who show after perhaps a week following the opening of the tympanum that they are not doing well. Then it should be given to the proper blood concentration and under such supervision that daily examinations of the blood can be made and should be continued in modified dosage for one week after all symptoms have subsided.

Why subject this 80 per cent needlessly to a toxic drug with its attendant dangers, often given in inadequate doses without proper supervision and stopped all too soon? More often than not, it does more harm than good. It would seem that the time has come when the indiscriminate, unwarranted and pernicious use of this drug should be stopped.

GEORGE W. STIMSON, M.D., Warren, Ohio.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

CHICAGO, Feb. 16-17, 1942. Council on Medical Education and Hospitals, Sec., Dr. William D. Cutter, 535 North Dearborn Street, Chicago.

BOARDS OF MEDICAL EXAMINERS

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, August 16, page 554.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS. Parts I and II. Various centers, Sept. 15-17. Part III, Baltimore and New York City, October; Boston, November. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written*. Nov. 3. Final date for filing application is Sept. 23. *Oral*. Dec. 12-13. Final date for filing application is Nov. 8. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written*. Oct. 20. Final date for filing application is Sept. 1. *Oral*. April, in advance of the meeting of the American College of Physicians and June, in advance of the meeting of the American Medical Association. Final date for filing application is Oct. 20. Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written*. Part I. Group B. Various centers, Jan. 3. Final date for filing application is Oct. 6. *Oral*. Part II. Groups A and B. Atlantic City, May or June. Final date for filing application is March 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral*. Chicago, Oct. 18. *Written*. March 7. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Washington, January. Final date for filing application is Nov. 1. Sec., Dr. Guy A. Caldwell, 3503 Prytania St., New Orleans, La.

AMERICAN BOARD OF PEDIATRICS: *Oral*. Philadelphia, March or April, at the time of the Region I meeting of the American Academy of Pediatrics. Cleveland, May, at the time of the Region III meeting of the American Academy of Pediatrics. Los Angeles, May, at the time of the Region IV meeting of the American Academy of Pediatrics. *Written*. Locally, approximately 6 weeks in advance of the date of oral examination. Sec., Dr. C. A. Aldrich, 707 Fullerton Ave., Chicago.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: *Oral*. New York, Dec. 19-20. Final date for filing application is Oct. 6. Sec., Dr. J. Stewart Rodman, 2200 Broadway, New York.

AMERICAN BOARD OF SURGERY: *Written*. Various centers, December. *Oral*. Chicago, February. Final date for filing application is Nov. 1. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

Maine March Report

The State of Maine Board of Registration of Medicine reports the written examination for medical licensure held at Portland, March 11-12, 1941. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Twenty candidates were examined, 13 of whom passed and 7 failed. Two physicians were licensed to practice medicine by reciprocity and 4 physicians so licensed on endorsement of credentials of the National Board of Medical Examiners. The following schools were represented.

School	PASSED	Year Grad.	Per Cent
Rush Medical College	(1940)	83	
Boston University School of Medicine ..	(1940)	80	
Harvard Medical School	(1940)	80, 81	
Tufts College Medical School	(1933) 75 6, (1940)	78	
University of Pennsylvania School of Medicine	(1939)	82	
Laval University Medical Faculty, Montreal ..	(1909)	75 4	
McGill University Faculty of Medicine ..	(1940)	78	
Medizinische Fakultät der Universität Wien ..	(1929) 76, (1938)	75 3	
Faculté Française de Médecine de l'Université de St. Joseph, Beyrouth ..	(1936)	83	
Universität Bern Medizinische Fakultät	(1936)	76	
School	FAILED	Year Grad.	
Boston University School of Medicine	(1936)		
Tufts College Medical School ..	(1935)		
Hahnemann Medical College and Hospital of Philadelphia ..	(1940)		
Laval University Faculty of Medicine ..	(1940)		
University of Montreal Faculty of Medicine ..	(1940)		
Medizinische Fakultät der Universität Wien ..	(1938)		
Universität Bern Medizinische Fakultät ..	(1938)		
School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Vermont College of Medicine	(1925)		Vermont
McGill University Faculty of Medicine ..	(1927)		California
School	LICENSED BY ENDORSEMENT	Year Grad.	
Tufts College Medical School ..	(1939)		
College of Physicians and Surgeons ..	(1937)		
Medizinische Fakultät, Graz ..	(1923)		
Faculty of Medicine ..	(1928)		

North Carolina Reciprocity Report

The North Carolina Board of Medical Examiners reports 29 physicians licensed to practice medicine by reciprocity and 6 physicians so licensed by endorsement on June 16. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine.....	(1930), (1938)		Arkansas
Yale University School of Medicine.....	(1937)		Michigan
University of Illinois College of Medicine.....	(1932)		Missouri
University of Louisville School of Medicine.....	(1938), (1940)		Kentucky
Tulane University of Louisiana School of Medicine.....	(1938)		Louisiana
Johns Hopkins University School of Medicine.....	(1922)		Tennessee
(1930), (1933) Maryland, (1932) Minnesota			
University of Michigan Medical School.....	(1938)		Michigan
University of Buffalo School of Medicine.....	(1936)		New York
Univ. of Rochester School of Medicine and Dentistry.....	(1935)		New York
University of Oklahoma School of Medicine.....	(1930)		Oklahoma
Jefferson Medical College of Philadelphia.....	(1927), (1936)		Penna.
Temple University School of Medicine.....	(1933)		Penna.
Meharry Medical College.....	(1929), (1940)		Tennessee
University of Tennessee College of Medicine.....	(1936), (1939)		Tennessee
University of Texas Faculty of Medicine.....	(1933)		Texas
Medical College of Virginia.....	(1917), (1940)		Virginia
Univ. of Virginia Dept. of Medicine (1926), (1937)			Virginia
University of Western Ontario Medical School.....	(1935)		New York

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad. of
Johns Hopkins University School of Medicine.....	(1936)	N. B. M. Ex.
Duke University School of Medicine.....	(1937)	U.S.P.H.S.,
(1938), (1939, 3) N. B. M. Ex.		

Alabama Reciprocity Report

The Alabama State Board of Medical Examiners reports 13 physicians licensed to practice medicine by reciprocity and 2 physicians so licensed on endorsement of credentials of the National Board of Medical Examiners from May 1 through June 11. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine.....	(1940)		Arkansas
Emory University School of Medicine.....	(1938)		Georgia
University of Illinois College of Medicine.....	(1937)		New York
Indiana University School of Medicine.....	(1921)		Indiana
State University of Iowa College of Medicine.....	(1932)		Iowa
Louisiana State University School of Medicine.....	(1940)		Louisiana
University of Michigan Medical School.....	(1925)		Michigan
Albany Medical College.....	(1931)		New York
Jefferson Medical College of Philadelphia.....	(1939)		N. Carolina
Temple University School of Medicine.....	(1937)		New Jersey
University of Pennsylvania School of Medicine.....	(1929)		New York
(1939) South Carolina			
Baylor University College of Medicine.....	(1927)		Texas

School	LICENSED BY ENDORSEMENT	Year Grad.
Northwestern University Medical School.....	(1940)	
Duke University School of Medicine.....	(1934)	

New Mexico April Report

The New Mexico Board of Medical Examiners reports the written examination for medical licensure held at Santa Fe, April 14-15, 1941. The examination covered 12 subjects and included 100 questions. An average of 75 per cent was required to pass. Two candidates were examined, both of whom passed. Eighteen physicians were licensed-to practice medicine by reciprocity. The following schools were represented:

School	PASSED	Year Grad.
Yale University School of Medicine.....	(1930)	
Northwestern University Medical School.....	(1941)	

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine.....	(1939, 2)		Arkansas
Northwestern University Medical School.....	(1906)		Wisconsin,
(1929) Iowa			
Rush Medical College.....	(1926)		Illinois
University of Illinois College of Medicine.....	(1930), (1936)		Illinois
State University of Iowa College of Medicine.....	(1933)		Iowa
Kansas Medical College, Medical Department of Washburn College.....	(1904)		Texas
New York Homeopathic Medical College and Hospital.....	(1894)		New York
Ohio State University College of Medicine.....	(1923)		Ohio
University of Oklahoma School of Medicine.....	(1938)		Oklahoma
Hahnemann Medical College and Hospital.....	(1909)		Penna.
University of Pittsburgh School of Medicine.....	(1919)		Penna.
Vanderbilt University School of Medicine.....	(1936)		Tennessee
Baylor University College of Medicine.....	(1940)		Texas
Medical College of Virginia.....	(1915)		W. Virginia

Colorado June Report

The Colorado State Board of Medical Examiners reports the written examination for medical licensure held at Denver, June 10-12, 1941. The examination covered 8 subjects and included 68 questions. An average of 75 per cent was required to pass. Forty-one candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
College of Medical Evangelists.....	(1941)*	81.5, 84.8, 87.3	
University of Colorado School of Medicine.....	(1941)	81.8,	
82, 82.3, 82.5, 83, 83, 83.3, 83.3, 84, 84.3, 84.3,			
84.3, 84.3, 84.3, 84.8, 85, 85, 85, 85.3, 85.5, 85.5,			
85.8, 85.8, 86, 86, 86.3, 86.3, 86.3, 86.5, 87, 87, 87,			
87.8, 88, 88, 88.3			
University of Oklahoma School of Medicine.....	(1940)	86	

* These applicants have completed four years' medical work and will receive the M.D. degree on completion of internship.

Maryland Homeopathic June Report

The Homeopathic Board of Medical Examiners of the State of Maryland reports the written examination for medical licensure held at Baltimore, June 24-25, 1941. The examination covered 9 subjects and included 70 questions. An average of 75 per cent was required to pass. Seven candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Hahnemann Medical Coll. and Hosp. of Philadelphia.....	(1940)	80,	
84, 86, 88, 90, (1941) 80, 82			

Oklahoma Reciprocity Report

The Oklahoma State Board of Medical Examiners reports 9 physicians licensed to practice medicine by reciprocity from January 16 through May 29. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Howard University College of Medicine.....	(1926)		Dist. Colum.
Tulane University of Louisiana School of Medicine.....	(1935)		Mississippi
Tufts College Medical School.....	(1935)		Mass.
St. Louis University School of Medicine.....	(1937)		Missouri
Washington University School of Medicine.....	(1935)		Missouri
Ohio State University College of Medicine.....	(1939)		Ohio
Western Reserve University School of Medicine.....	(1936)		Ohio
University of Texas School of Medicine.....	(1918)		Texas
University of Wisconsin Medical School.....	(1938)		Wyoming

Kansas June Report

The Kansas State Board of Medical Registration and Examination reports the written examination for medical licensure held at Kansas City, June 17-18, 1941. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Seventy-five candidates were examined, all of whom passed. Ten physicians were licensed to practice medicine by reciprocity and 1 physician so licensed on endorsement of credentials of the National Board of Medical Examiners. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Northwestern University Medical School.....	(1940)	83.7,	
(1941) 83.1, 86.2			
University of Kansas School of Medicine.....	(1941)	79.6,	
79.7, 80.4, 80.7, 80.8, 81.7, 81.9, 81.9, 82.1, 82.2, 82.5,			
82.5, 82.7, 82.9, 83, 83, 83.2, 83.2, 83.2, 83.3, 83.3,			
83.7, 83.9, 84.1, 84.3, 84.3, 84.4, 84.5, 84.9, 85, 85.3,			
85.5, 85.6, 85.8, 85.9, 86, 86.1, 86.1, 86.4, 86.6, 86.6,			
86.7, 86.7, 87, 87.1, 87.6, 87.7, 87.7, 87.7, 88, 88.1,			
88.1, 88.4, 88.5, 88.5, 88.6, 88.7, 89.1, 89.2, 89.3,			
89.6, 89.6, 90.6, 91.9, 92.6, 93			
Tulane University of Louisiana School of Medicine.....	(1941)	82.9, 89.3	
New York University College of Medicine.....	(1939)	88.1	
University of Pennsylvania School of Medicine.....	(1941)	85.2, 87.2	

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School.....	(1937)		Illinois
Rush Medical College.....	(1938),		Illinois
Tufts College.....	(1915)		Nebraska
St. Louis Univ.....	(1937), (1939)		Missouri
Washington University School of Medicine.....	(1919), (1928),		
(1929), (1936) Missouri			

School	LICENSED BY ENDORSEMENT	Year Grad.
Yale University School of Medicine.....	(1936)	

Ohio Reciprocity Report

The Ohio State Medical Board reports 18 physicians licensed to practice medicine by reciprocity and 3 physicians so licensed on endorsement of credentials of the National Board of Medical Examiners on April 1. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
College of Medical Evangelists	(1917)	California
University of Georgia School of Medicine	(1938)	Georgia
Northwestern University Medical School	(1936)	Wisconsin
Indiana University School of Medicine	"	Indiana
Tulane University of Louisiana	"	Texas
Johns Hopkins University School of Medicine	"	Maryland
University of Michigan Medical School	(1938), (1939)	Michigan
Detroit College of Medicine and Surgery	(1918)	Michigan
University of Minnesota Medical School	(1938)	Minnesota
St. Louis University School of Medicine	(1938)	Missouri
Washington University School of Medicine	"	Missouri
University of Nebraska College of Medicine	"	Nebraska
Columbia University College of Physicians and Surgeons	(1935)	Minnesota
Hahnemann Medical College and Hospital of Philadelphia	(1929), (1936), (1939)	Pennsylvania

School	LICENSED BY ENDORSEMENT	Year Grad.
University of Colorado School of Medicine	(1934)
Northwestern University Medical School	(1938)
University of Rochester School of Medicine and Dentistry	(1938)

New York Endorsement Report

The New York State Board of Medical Examiners reports 109 physicians licensed to practice medicine by endorsement from January 18 through June 19. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Stanford University School of Medicine	(1931)	California
University of Southern California School of Medicine	(1938)	California
Yale University School of Medicine	(1933), (1934), (1938)	N. B. M. Ex.
Georgetown University School of Medicine	(1934)	Maryland
(1936) Penna, (1936), (1937), (1939)	N. B. M. Ex.		
Howard University College of Medicine	(1930)	Maryland
Emory University School of Medicine	(1926)	Georgia
Northwestern University Medical School	(1937)	Iowa
(1938) N. B. M. Ex.			
The School of Medicine of the Division of the Biological Sciences	(1937)	Washington
State University of Iowa College of Medicine	"	Iowa
Tulane University of Louisiana School of Medicine	"	Alabama
Johns Hopkins University School of Medicine	"	M. Ex.
(1938, 2) Maryland			
University of Maryland School of Medicine and College of Physicians and Surgeons	(1938, 2)	Maryland
(1939) N. B. M. Ex.			
Boston University School of Medicine	(1938, 2), (1939)	N. B. M. Ex.
Harvard Medical School	(1932), (1934), (1936), (1937, 3), (1938, 2) N. B. M. Ex., (1937) North Carolina	
Tufts College Medical School	(1937), (1939)	N. B. M. Ex.
University of Michigan Medical School	(1925)	Michigan
(1933) N. B. M. Ex.			
University of Minnesota Medical School	(1926)	Minnesota
(1940) N. B. M. Ex.			
St. Louis University School of Medicine	(1939)	N. B. M. Ex.
Creighton University School of Medicine	(1939)	N. B. M. Ex.
University of Nebraska College of Medicine	(1934), (1935)	Nebraska
(1937) Oregon			
Columbia University College of Physicians and Surgeons	(1937), (1939, 2)	N. B. M. Ex.
Cornell University Medical College	(1935), (1939, 3)	N. B. M. Ex.
(1938) Alabama			
Long Island College of Medicine	(1938), (1939, 3)	N. B. M. Ex.
New York Medical College, Flower and Fifth Avenue Hospitals	(1938), (1939, 14)	N. B. M. Ex.
New York University College of Medicine	(1937), (1939)	N. B. M. Ex.
University of Buffalo School of Medicine	(1938), (1939, 4)	N. B. M. Ex.
Syracuse University College of Medicine	(1939)	N. B. M. Ex.
University of Rochester School of Medicine and Dentistry	(1937)	Virginia
Duke University School of Medicine	(1937)	N. B. M. Ex.
Western Reserve University School of Medicine	(1923)	N. B. M. Ex.
University of Oregon Medical School	(1936)	Washington
Hahnemann Medical College and Hospital of Philadelphia	(1936)	Penna
Jefferson Medical College of Philadelphia	(1933)	Minnesota
(1935) West Virginia			
Temple University School of Medicine	(1931), (1933)	Penna
University of Pennsylvania School of Medicine	(1937)	Penna
Woman's Medical College of Pennsylvania	(1938), (1939)	N. B. M. Ex.
University of Vermont College of Medicine	(1938), (1939, 2)	N. B. M. Ex.
University of Manitoba Faculty of Medicine	(1923)	Minnesota
University of Toronto Faculty of Medicine	"	N. B. M. Ex.
University of Western Ontario	"	Ontario
McGill University Faculty of Medicine	"	Ex
Medizinische Fakultät der Universität Pisa	"	Ex
Regia Università di Pisa Facoltà di Medicina e Chirurgia	(1936)	N. B. M. Ex.
Licentiate of the Royal College of Physicians and Surgeons of Glasgow	(1939)	N. B. M. Ex.
American University of Beirut School of Medicine	(1940)	N. B. M. Ex.

Tennessee Endorsement Report

The Tennessee State Board of Medical Examiners reports 22 physicians licensed to practice medicine by endorsement from January 16 through May 28. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists	(1938) N. B. M. Ex.	(1940)	California
Emory University School of Medicine	(1938)	N. Carolina
Rush Medical College	(1939)	Missouri
University of Illinois	(1939)	Illinois
University of Kentucky	(1903)	Kentucky
University of Virginia	(1940)	Kentucky
College of Physicians and Surgeons of Baltimore	(1906)	Virginia
University of Maryland School of Medicine and College of Physicians and Surgeons	(1929)	Ohio
Washington University School of Medicine	(1937)	Missouri
University of Nebraska College of Medicine	(1935)	Nebraska
University of Buffalo School of Medicine	(1921)	New York
Jefferson Medical College of Philadelphia	(1930)	N. Carolina
University of Pennsylvania School of Medicine	"	N. B. M. Ex.
University of Pittsburgh School of Medicine	"	Penna
Medical College of Virginia	"	Virginia
Univ. of Virginia Department of Medicine	(1936), (1937)	Virginia
University of Manitoba Faculty of Medicine	(1937)	New Jersey
Queen's University Faculty of Medicine	(1918)	New Brunswick

Wyoming June Report

The Wyoming State Board of Medical Examiners reports the written examination for medical licensure held at Cheyenne, June 2-3, 1941. The examination covered 12 subjects and included 89 questions. An average of 75 per cent was required to pass. Three candidates were examined and passed. Seven physicians were licensed to practice medicine by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
College of Medical Evangelists	(1941)	82
University of Colorado School of Medicine	(1940)	81
Loyola University School of Medicine	(1941)	84*

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of Colorado School of Medicine	(1938)	Colorado
University of Georgia School of Medicine	(1929)	Georgia
University of Nebraska College of Medicine	(1914), (1932)	Nebraska
University and Bellevue Hospital Medical College	(1916)	Connecticut
Syracuse University College of Medicine	(1936)	Illinois
University of Alberta Faculty of Medicine	(1940)	Canada

* License has not been issued

Bureau of Legal Medicine
and Legislation

MEDICOLEGAL ABSTRACTS

Autopsy: Liability of Coroner for Ordering Unauthorized Autopsy.—Apparently in the course of his employment Crenshaw collapsed and was taken to the nearby office of a cult practitioner who pronounced him dead and notified the defendant, the county coroner. On the direction of the coroner an undertaker then removed the body to the county hospital. Without ordering an inquest, without making any investigation whatever other than having a telephone conversation with the cult practitioner referred to, in which the coroner was informed that Crenshaw had "reportedly fallen over dead while working," and without himself examining the body, the coroner ordered an autopsy to be performed by the department of pathology of a local medical school. The autopsy was performed without the consent of Crenshaw's widow, who did not learn of it until some time after burial. Subsequently she sued the coroner. The jury returned a verdict for \$5,000 for actual damages and for \$5,000 for punitive damages. The trial court ordered a remittitur of the whole amount of the punitive damages awarded and entered judgment for the total amount awarded for actual damages. The coroner then appealed to the St. Louis court of appeals, Missouri.

The coroner in Missouri, said the court of appeals, is a constitutional officer whose powers and duties with respect to the holding of inquests and autopsies are more or less specifically defined and limited by statute. In the opinion of the court, the decision of the Kansas City court of appeals in *Patrick v. Employers Mutual Liability Insurance Co.*, 233 Mo. App. 251,

118 S. W. (2d) 116 (J. A. M. A. 112:2466 [June 10] 1939), in which the Missouri statutes relating to coroners were construed, was determinative on the issues presented in the present case. In the Patrick case, said the court of appeals, it was held squarely that a coroner is invested by law with no authority to order an autopsy performed except in connection with, and as an incident to, an inquest to be held before a jury on the body of a person supposed to have come to his death by violence or casualty. In the Patrick case the court held that the purpose of an inquest was to inquire, on a view of the body, how and by whom such person came to his death; that, while the coroner acts judicially and has a discretion with respect to determining whether an inquest shall be held, neither the inquest itself nor the calling and holding of an autopsy in connection with it is a proceeding judicial in character so as to relieve the coroner from civil liability for his acts in relation to it; that it was never intended that the coroner should have the right to order an autopsy performed in any case in which, in his mere judgment, an autopsy might be deemed proper for any such reason as the advancement of science or the like, and that while it might or might not be thought desirable that the coroner should have the power to hold an autopsy to determine whether an inquest should be held the law gives him no such authority, so that in the case of a person who is merely supposed to have come to his death by violence or casualty an autopsy performed except in connection with an inquest is unlawful and illegal, regardless of what might be the coroner's good faith in the exercise of a mistaken authority in the matter. Of course, continued the St. Louis court, if the widow, as the person entitled to the right of sepulture, had given her consent to the autopsy, there would have been no liability on the coroner's part (in the absence of a performance of the autopsy in an improper manner), even though no inquest was held or basis afforded for the defendant himself to have declared the cause of death on a mere coroner's view of the body. However, neither the widow nor any one for her gave such consent, and consequently the autopsy must be held to have been unlawful and illegally performed.

The coroner contended that he was justified in ordering an autopsy to enable him to sign a death certificate. The answer to this, said the court, is the fact that, under the statute having to do with the coroner's duties with respect to the registration of deaths, he is authorized to execute a certificate of death only if the case is referred to him by the local registrar of vital statistics because of the absence of an attending physician and because the circumstances of the death render it probable that the death was caused by unlawful or suspicious means. In this case, not only was the deceased receiving treatment from a physician for high blood pressure up to the very time of his death but in addition the case was concededly not referred to the defendant by the registrar for investigation and certification. Neither was the defendant requested by the relatives or friends of the deceased to hold a view or inquest on the body for the purpose of issuing a certificate of the cause of death. In the opinion of the court, the autopsy performed on the body was not to be justified on any such ground.

The coroner next contended that the trial court erred in refusing to permit the physician who performed the autopsy to answer a question put to him on cross examination as to whether the cause of death could have been ascertained without an autopsy on the ground that the question at issue was not whether the cause of death could have been ascertained without an autopsy but whether the defendant had in any event possessed the legal right to direct the performance of the autopsy. However effective, said the court of appeals, an autopsy might have been as a means of revealing the true cause of death, such a consideration would not have excused its performance without legal authority therefor, and, in the absence of such authority, the matter of its desirability was irrelevant to the case unless, perhaps, on the question of the coroner's good faith.

The court of appeals believed an award for actual damages for the unlawful performance of an autopsy was proper even though the only damages sustained by the widow were for

mental anguish. While ordinarily damages for mental anguish are not recoverable unless connected with some physical injury, the trend of modern authority is not to apply such a restriction in the case of interference with rights involving dead bodies, where mental anguish to the surviving relatives is not only the natural and probable consequence of the character of the wrong committed but indeed is frequently the only injurious consequence to follow. The court believed, however, that the amount awarded for actual damages was excessive under the circumstances here present. The autopsy in this case was performed in a proper and scientific manner. There was no mutilation of the body visible to the eye. While the widow undoubtedly suffered mental anguish in more or less degree from the mere knowledge that even a proper autopsy had been performed, a state of grief on her part was none the less a natural consequence of the death of her husband in and of itself, and there was nothing to show that the reaction of which she complained was materially different from that which would have followed in any event if there had been no autopsy performed on the body. The court then adverted to the amount awarded for actual damages in the Patrick case—\$1,500—and felt that that sum furnished an accurate guide beyond which the limits of reasonable compensation for actual damages should not be permitted to extend in the absence of special and unusual circumstances. Accordingly the court, in effect, ordered a judgment for \$1,500 in favor of the widow.—*Crenshaw v. O'Connell*, 150 S. W. (2d) 489 (Mo., 1941).

Society Proceedings

COMING MEETINGS

- American Academy of Pediatrics, Boston, Oct. 8-11. Dr. Clifford G. Grulee, 636 Church St., Evanston, Ill., Secretary.
- American Association for the Study of Neoplastic Diseases, Washington, D. C., Sept. 4-6. Dr. Eugene R. Whitmore, 2139 Wyoming Ave. N.W., Washington, D. C., Secretary.
- American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va., Sept. 11-13. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.
- American Association of Railway Surgeons, Chicago, Sept. 8-10. Dr. Daniel B. Moss, 547 West Jackson Blvd., Chicago, Secretary.
- American Clinical and Climatological Association, Skytop, Pa., Oct. 16-18. Dr. Francis M. Rackemann, 263 Beacon St., Boston, Secretary.
- American Congress of Physical Therapy, Washington, D. C., Sept. 15. Dr. Richard Kovacs, 2 East 88th St., New York, Secretary.
- American Hospital Association, Atlantic City, N. J., Sept. 15-19. Dr. Bert W. Caldwell, 18 East Division St., Chicago, Executive Secretary.
- American Public Health Association, Atlantic City, N. J., Oct. 14-17. Dr. Reginald M. Atwater, 50 West 50th St., New York, Executive Secretary.
- American Roentgen Ray Society, Cincinnati, Sept. 23-26. Dr. Carleton B. Pearce, Royal Victoria Hospital, Montreal, Canada, Secretary.
- Central Association of Obstetricians and Gynecologists, New Orleans, Oct. 24. Dr. William F. Mengert, 515 Newton Road, Iowa City, Secretary.
- Colorado State Medical Society, Estes Park, Sept. 17-20. Mr. Harvey T. Sethman, 537 Republic Bldg., Denver, Executive Secretary.
- District of Columbia, Medical Society of the, Washington, Sept. 30-Oct. 2. Dr. Theodore Wiprud, 1718 M Street N.W., Washington, Secretary.
- Indiana State Medical Association, Indianapolis, Sept. 23-25. Mr. Thomas A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.
- Kentucky State Medical Association, Louisville, Sept. 29-Oct. 3. Dr. Arthur T. McCormack, 620 South Third St., Louisville, Secretary.
- Michigan State Medical Society, Grand Rapids, Sept. 16-18. Dr. L. Fernald Foster, 2020 Olds Tower, Lansing, Secretary.
- Mississippi Valley Medical Society, Cedar Rapids, Iowa, Oct. 1-3. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.
- Nevada State Medical Association, Elko, Sept. 26-27. Dr. Horace J. Brown, P. O. Box 698, Reno, Secretary.
- Oregon State Medical Society, Portland, Sept. 3-6. Dr. M. L. Bridgeman, 1920 S. W. Taylor St., Portland, Secretary.
- Pacific Association of Railway Surgeons, Salt Lake City, Sept. 12-13. Dr. W. T. Cummins, 1400 Fell St., San Francisco, Secretary.
- Pennsylvania, Medical Society of the State of, Pittsburgh, Oct. 6-9. Dr. Walter F. Donaldson, 500 Penn. Ave., Pittsburgh, Secretary.
- Rocky Mountain Medical Conference, Yellowstone Park, Wyo., Sept. 24. Mr. Harvey T. Sethman, 1612 Tremont Place, Denver, Secretary.
- Vermont State Medical Society, Burlington, Oct. 2-3. Dr. Benjamin F. Cook, 154 Bellevue Ave., Rutland, Secretary.
- Virginia, Medical Society of, Virginia Beach, Oct. 6-8. Miss A. V. Edwards, 1200 East Clay St., Richmond, Secretary.
- Washington State Medical Association, Seattle, Aug. 24-26. Dr. Vernon W. Spickard, 1305 Fourth Ave., Seattle, Secretary.
- Wisconsin, State Medical Society of, Madison, Sept. 10-12. Mr. G. B. Larson, 110 East Main St., Madison, Assistant Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1931 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Hygiene, Baltimore

33:65-94 Section A (May) 1941. Partial Index

69-100 Section B 69-112 Section C 71-112 Section D

Section B

- Pathology of Equine Encephalomyelitis in Young Chickens. E. E. Tyzzer and A. W. Sellards, Boston.—p. 69.
- Fermentative Variability and Serologic Identity of Organisms Isolated from Food Poisoning Outbreak. Elinor Van Dorn Smith, Northampton, Mass.—p. 82.
- Antigenic Properties and Tissue Specificity of Broths as Shown by Precipitation, Complement Fixation and Anaphylaxis. G. H. Bailey and S. Raffel, Baltimore.—p. 86.

Section C

- Summary of "Tarsimaculatus" Complex of Anopheles (Diptera: Culicidae). L. E. Rozeboom and A. Gabaldon, Baltimore.—p. 88.
- New Drug Effective Against Bird Malaria. R. Hegner, Evaline West, Mary Ray and Marian Dobler, Baltimore.—p. 101.

Section D

- Studies on Acquired Immunity to Dwarf Tapeworm, Hymenolepis Nana Var. Fraterna, in Mouse Host. J. T. Hearin, Baltimore.—p. 71.
- Studies on Oxyuriasis: XXIII. Survival of Eggs of Enterobius Vermicularis Under Known Conditions of Temperature and Humidity. Myrna F. Jones and L. Jacobs, Washington, D. C.—p. 88.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

45:641-800 (May) 1941. Partial Index

- Radiosensitivity of Tumors. S. Warren, Boston.—p. 641.
- *Comments on Treatment and Sequelae of Carcinoma of Uterus. Elizabeth Newcomer, Denver.—p. 651.
- *Failures Following Treatment by Irradiation of Cases of Benign Uterine Bleeding and Fibromyoma. J. A. Corscaden, New York.—p. 661.
- Effects of Roentgen Irradiation on Experimental Hyperthyroidism. L. H. Garland, W. C. Cutting, G. B. Robson and W. W. Newman, San Francisco.—p. 692.
- Radiodermatitis Among Physicians. E. T. Leddy and F. J. Rigos, Rochester, Minn.—p. 696.
- Primary Tumors of Lungs: Roentgen Diagnosis and Therapy; Report of 130 Cases. B. E. Farberov and E. A. Baslow, Kharkov, Soviet Union.—p. 701.
- Progressive Hepatolenticular Degeneration with Electroencephalograms and Pneumoencephalograms: Report of Case. H. Weatherly, Boston.—p. 714.
- Roentgen Ray Aid in Diagnosis of Acute Portal Thrombosis (Pylephlebitis). A. Bassler, New York.—p. 724.
- Unusual Locking of Elbow Joint by Sesamum Cubiti and Free Joint Body. M. S. Burman, New York.—p. 731.
- Radiology in the United States Army. W. W. McCaw, Ancon, Canal Zone.—p. 733.
- Explosion and Fire Hazard of Anesthetics in Presence of Roentgenologic Apparatus. B. A. Greene, Brooklyn.—p. 737.
- Biophotometric Measurements of Dark Adaptation Among Roentgenologists: Measure of Vitamin A Deficiency. H. H. Lerner, Boston.—p. 753.

Carcinoma of Uterus.—According to Newcomer, fistulas are seldom due to faulty methods of irradiation but to the extension of the disease. Constriction of the ureters, ureteral dilatation and hydronephrosis are also generally due to extension. A dull, nagging pain in the hips, groin or radiating down the thigh or leg may be caused by ureteral obstruction. Cystoscopy and visualization of the ureters are indicated in such cases. Similar symptoms are caused by extension of the disease to the lumbar and sacral nerves and to the uterosacral ligaments. Masses may form on the side walls of the pelvis by extension through the parametrium and broad ligaments, causing excruciating pain. Pressure on the veins of the lower extremities may result in

edema of the lower limbs and external genitalia. Invasion of the rectum may result in stenosis, ulceration, intestinal obstruction and fistulas. If low abdominal pain follows radium application, patency of the cervical canal must be established. Cancerous tissue may be growing upward along the ureters behind the peritoneum with consequent involvement of the abdominal organs and the peritoneum. The disease rarely spreads through the abdominal and thoracic nodes to the supraclavicular regions. Metastasis to the bones does not occur as often in uterine cancer as in other forms of cancer. Roentgen therapy should precede radium therapy. It reduces infection and the size of the tumor, makes the application of radium safer, renders possible the giving of a heavier dose of radium and distributes it more evenly throughout the tumor. It makes unnecessary the giving of radium in divided doses, except in an extremely large uterus. Radium should be given in both the uterine and the cervical canals in doses short of tolerance by the surrounding tissues. As large a dose of radium as can be safely tolerated should be applied to the vault of the vagina by means of the bomb, colpostat or interstitial irradiation in selected cases. Roentgen therapy, by means of at least 300 kilovolts, should be evenly distributed throughout the true pelvis. The treatment is repeated in six weeks. The addition of two lateral fields and another field over the lumbar vertebrae would minimize extensions to the side walls of the pelvis and to the lumbar area, which are especially subject to extensions. The author's method is to cauterize the area from which a biopsy specimen has been taken. Roentgen treatment is then given every other day to two pelvic ports, anterior and posterior, each 20 cm. square. An average size patient receives 1,300 roentgens over each port in fourteen days. Within four to seven days radium is applied. Usually 100 mg. is distributed in 5 mg. needles. The radium usually remains in place for thirty-six hours. Three or four days later a vaginal bomb containing 100 mg. of radium is placed in the vaginal canal against the cervix for from twenty-four to thirty-six hours.

Benign Uterine Bleeding and Fibromyoma.—In Corscaden's experience bleeding was controlled in 98.1 per cent of the 733 cases of uterine bleeding and myoma treated with radium and roentgen irradiation. Thirty (6.1 per cent) of 493 patients treated by radium and 18 (7.6 per cent) of 240 treated by roentgen irradiation required supplementary irradiation. Fourteen (1.9 per cent) of the 733 patients failed to have the bleeding controlled. Five of these received inadequate doses of radium or roentgen rays, 4 were operated on before sufficient time had elapsed for the irradiation to complete its effect and 2 had pedunculated submucous myoma. Three failures were unexplained. Dysmenorrhea disappears when menstruation ceases. Following substerilizing doses this symptom reappears in 66 per cent of the patients in whom menstruation returns. Pain other than dysmenorrhea and urinary symptoms have been relieved in less than 50 per cent. Uterine tumor is satisfactorily reduced in 94 per cent of patients if it is no larger than a pregnancy of five months. When larger than a pregnancy of six months, it has been satisfactorily reduced in only 40 per cent. Following a substerilizing dose of radiation, in only 2 of 15 fibromyomas was the tumor satisfactorily reduced while menstruation still continued. Two patients had symptoms and signs of tumor degeneration following roentgen therapy. In no instance has roentgen therapy caused a pelvic inflammation to flare up. Four patients treated with radium contracted surgical infection following dilation and curettage and the insertion of radium into the uterus. No instance of carcinoma of the uterus has been revealed within two years after radium and roentgen therapy for benign bleeding or myoma. Two cystadenomas of the ovary were discovered four and five years, respectively, after irradiation. The 733 cases were a carefully selected group and represented about 30 per cent of the total number of such cases encountered. The others were curable by conservative methods or presented conditions which contraindicated radium or roentgen therapy. Of the contraindications only the submucous myoma is important as a cause of failure to control bleeding, and carcinoma of the uterus and a neoplasm of the ovary a cause of disaster from neglect.

Am. J. Syphilis, Gonorrhea and Ven. Dis., St. Louis 25:265-396 (May) 1941

- Case Control Methods in Dispensary Gonorrhea. R. Deakin and M. S. Wortman, St. Louis.—p. 265.
- Value of Tabulating Unit to Gonorrhea Clinic. D. K. Hibbs and B. H. Dickerson, Chicago.—p. 270.
- Effect of Syphilis and Its Treatment on Incidence of Toxemia of Pregnancy. C. H. Peckham, Baltimore.—p. 280.
- Supposed Detoxifying Effect of Various Substances Used in Association with Arsphenamines. G. O. Doak, Baltimore.—p. 286.
- Studies on Role of Spirochaeta Pallida in Wassermann Reaction: I. Complement Fixation in Syphilis, Leprosy and Malaria with Spirochetal Antigens. J. A. Kolmer, Clara C. Kast and Elsa R. Lynch, Philadelphia.—p. 300.
- Rapid Slide Flocculation Test for Syphilis. F. Márquez, Rosita, Coahuila, Mexico.—p. 319.
- Effect of Sulfanilamide and Related Compounds on Gonococcus and Experimental Gonococcal Infection in Mice. A. Cohn, New York.—p. 324.
- *Further Observations on Gonococcal Vulvovaginitis. A. Cohn, A. Steer and Eleanor L. Adler, New York.—p. 329.
- *Studies of Transmissibility of Syphilis: Infectiousness of Vaginal Secretions and Menstrual Blood of Syphilitic Women. H. Pariser, Philadelphia.—p. 339.

Gonococcal Vulvovaginitis.—Cohn and his associates made a twenty-eight week follow-up study on 234 cases of gonococcal vulvovaginitis. The superiority of cultures over smears for diagnosis and for determining cure was evident. As the length of observation increases and the disease progresses, or if treatment is instituted, the accuracy of diagnosis by the smear method decreases. Toward the end of the twenty-eight weeks of observation there are few instances of positive diagnosis by either smear or culture. At this time, because some children probably have been reinfected, there is a greater degree of correspondence between smear and culture. Of a total of 1,070 examinations 98.9 per cent were positive by culture and 67.1 per cent by smear. It was found that more than 50 per cent of untreated patients undergo spontaneous cure within thirteen weeks. The carrier state develops in about one fifth of these patients, in whom occasional positive cultures occur in the absence of clinical signs even after twenty-eight weeks of observation. However, all patients ultimately become negative. Sulfanilamide therapy resulted in cure in two thirds of the hospitalized patients within two weeks of treatment. Sulfapyridine was followed promptly by negative cultures in all cases, with recurrence in less than 10 per cent. Estrogen brought about early clinical improvement, but the course of the disease was little different from that in the untreated controls. Rectal cultures were positive in 45 per cent of the patients. In none was there characteristic evidence of gonococcal proctitis clinically.

Transmissibility of Syphilis.—In determining the transmissibility of syphilis, Pariser injected vaginal secretions from 30 untreated syphilitic women under the dorsal skin of mice. The vaginal secretions from 7 women produced syphilis in animals. Five of these 7 women had local cervical lesions. The clinical manifestations of the disease in these instances varied from about one week to six and one-half years. The sixth "positive" result was obtained from the menstrual blood of a secondary syphilitic woman with no local cervicovaginal lesions, and the seventh was produced from an early secondary syphilitic pregnant woman whose cervix was edematous, bluish and boggy, but who presented no visible open lesions. Initial darkfield examination revealed organisms in small numbers closely conforming to the universally accepted morphology of *Spirochaeta pallida* in 4 cases and organisms which were slightly thicker than average but which by subsequent animal inoculation were proved to be *Spirochaeta pallida* in 2 instances; the result was negative in the seventh case. In the absence of lesions the darkfield examination of 50 per cent of the women revealed spirochetes easily distinguished from *Spirochaeta pallida* unless wide latitude is permitted in the interpretation of the spirochetal form of the organism of syphilis. The case material consisted of 76 per cent early (within the first four years of the disease) syphilis and 24 per cent late syphilis. The conclusions from the study that the syphilitic woman discharges spirochetes into the vagina only in the presence of local lesions or through her menstrual blood during the early stages are not to refute the point of view that syphilis may be acquired without the production of a lesion or that the woman may temporarily before or after acquiring the disease harbor the spiro-

chetes on the presumably intact cervix. The conclusions do postulate, however, that, once infection has been acquired, the woman whose biologic reaction is thereby considerably altered to the organism discharges *Spirochaeta pallida* into the vagina only in the presence of lesions which may occur early or chronologically late when the immunity balance shifts toward the development of infectious, relapsing, even though at times inconspicuous and transient lesions. Among the 23 patients the infectiousness of whose vaginal secretions could not be demonstrated there were 5 (4 early and 1 late) from whom two or three vaginal washings were collected on different days to detect any possible changes in the pathogenicity of the flora over one or two weeks. The results were "negative." Their vaginal secretions varied from mucoid to purulent. In 2 instances primary inoculation of vaginal secretions into mice killed the animals within a week.

American Review of Tuberculosis, New York

43:581-712 (May) 1941

- *BCG Vaccination in Montreal: Statistical Analysis of Results of Research by Dr. J. A. Baudouin on BCG Vaccination in Montreal. J. W. Hopkins, Ottawa, Ont., Canada.—p. 581.
- *Pulmonary Tuberculosis in Medical Students and Nurses. R. G. Hahn, C. Muschlenheim and J. Freund, New York.—p. 600.
- Lymphohematogenous Tuberculosis. S. Cohen, Jersey City, N. J.—p. 612.
- Gastrointestinal Complications in Pulmonary Tuberculosis. L. L. Hardt and S. J. Cohen, Chicago.—p. 628.
- Tuberculosis in Rat: III. Correlation Between Histologic Changes and Fate of Living Tubercle Bacilli in Organs of Albino Rat. C. C. Wessels, Philadelphia.—p. 637.
- Tuberculosis of Tonsils and Skin: Contribution to Theory of Origin of Langhans' Giant Cells. S. Tannhauser, Tucson, Ariz.—p. 663.
- Meinicke Flocculation Reaction for Tuberculosis. W. H. McMenemey, Oxford, England.—p. 670.
- Leukocytes in Tuberculosis: Further Test of Validity of Pathologic Interpretation of Leukocytic Counts in Tuberculous Patients. E. M. Medlar, New York.—p. 680.
- The Law of Small Numbers, as Applied to Virulence Measurement. W. N. Berg, New York.—p. 685.
- Dermatopulmonary Reaction: I. Behavior of Dermatopulmonary Reaction in Artificial Pneumothorax. S. Puder, Budapest, Hungary.—p. 692.
- Id.: II. Changes in Nervous System Associated with Dermatopulmonary Reaction. S. Puder, Budapest, Hungary.—p. 699.
- Id.: III. Influence of Dermatopulmonary Reaction on Experimental Military Tuberculosis. S. Puder, Budapest, Hungary.—p. 709.

BCG Vaccination.—Hopkins states that more than 20,000 Montreal infants were given BCG vaccine on the advice of physicians and with the consent of parents. His study is limited to 793 of these children who were exposed to contact with a patient having positive sputum and to approximately 1,200 control children in similar contact not given the vaccine. The children of both groups were drawn from the lower middle and poorer sections of the community. Of 30 deaths from causes other than tuberculosis among the vaccinated children, 4 were confirmed at necropsy and 11 by clinical and laboratory examinations. There were 37 deaths from nontuberculous causes among the control group; 2 of these were confirmed at necropsy and 15 by hospital examination. There were 8 deaths from tuberculosis among the vaccinated group, 3 confirmed at necropsy, 3 by hospital examination and 1 by a specialist in tuberculosis. The remaining child who died was diagnosed clinically as having pulmonary and meningeal tuberculosis, and both parents had active pulmonary tuberculosis. Of the 23 tuberculosis deaths among the control group, 1 was confirmed at necropsy, 10 by hospital examination and 3 by specialists. As to tuberculosis morbidity, there were 37 active and latent morbid cases in the vaccinated group; 32 diagnoses were confirmed by roentgen or fluoroscopic examination and 32 by hospital observation. Among the control group there were 81 active or latent instances of tuberculosis; 71 were confirmed by roentgen or fluoroscopic examination and 77 by hospital observation. With but two exceptions (at the age of 4 and 5) the differences in the general mortality by age of both groups are in favor of the vaccinated children. Even the combined rate for the age groups from 0 to 4 years of age of controls differs from the vaccinated rate of 86 by only 1.8 times its standard error. The morbidity figures favor the vaccinated children. Analysis shows that the oral administration of BCG vaccine at birth substantially reduced the incidence of tuberculosis during the third, fourth and fifth

years of life and that, had larger numbers been available for comparison, there probably would have been significant reductions in the first two years of life. As the vaccinated children were exposed to a slightly higher accumulated duration of contact and were of a lower average age at the beginning of contact, it seems reasonable to ascribe the favorable differences in their "pathologic infection" to the effects of vaccination. The similarity of the vaccinated and control groups in respect to nontuberculosis mortality is not indicative of any pronounced paraspecific immunity resulting from BCG, as has been suggested by some investigators. Acceptable information regarding the duration of the effectiveness of vaccination may be secured only by continued observation of the children now in the lower age groups.

Pulmonary Tuberculosis in Medical Students and Nurses.—Hahn and his associates report the results of tuberculosis case finding (by the intracutaneous tuberculin test and roentgenogram of the chest) among medical and nurse students at Cornell University Medical College and the New York Hospital. The percentage of positive reactors among six first year classes of medical students varied from 75 to 89. Collectively, of the 315 tested 259, or 82.2 per cent, were positive and 56, or 17.7 per cent, were negative. Of three fourth year classes totaling 147 students, 135, or 91.8 per cent, were positive and 12, or 8.1 per cent, were negative. The percentage of positive reactors in the fourth year classes tested was thus 9.6 higher than in the first year classes. Of the total of 278 student nurses of the classes of 1935 to 1941, inclusive, tested in their first year 216, or 77.6 per cent, were positive and 62, or 22.3 per cent, were negative. Of the classes of 1934 and 1936, totaling 69 nurses, examined during their second year 57, or 82.6 per cent, were positive and 12, or 17.4 per cent, were negative. The classes of 1933, 1935, 1936, 1937 and 1938 were examined at the end of their third year, and of 130 graduating nurses tested 119, or 91.5 per cent, were positive and 11, or 8.5 per cent, were negative. The student nurses thus showed an increase of positive reactors from 77.6 per cent the first year to 91.5 per cent at graduation. The percentage of negative reactors shortly before graduation of both medical and nursing student groups varied in different years from 0 to 14.3. The average for the nursing students (of the classes of 1933 to 1939 inclusive) has been 6 per cent negative on graduation and for the medical students 8.7 per cent. A total of 442 medical students had at least one roentgen examination; 71, or 16.1 per cent, had calcified deposits in the tracheobronchial lymph nodes, in the pulmonary parenchyma or in both, and 5 had shadows characteristic of chronic pulmonary tuberculosis in their initial roentgenograms. The lesions were all minimal in extent. Only 2 of the 5 were found in the first academic year. Four other students, who had negative initial roentgenograms, had characteristic shadows of chronic pulmonary tuberculosis in subsequent years. Three were minimal and 1 was moderately advanced. Of these 9 students, 2 per cent of the total, 4 had lesions which were obviously progressive and they were referred to sanatoriums. The other 5 were allowed to complete their course. Of these, subsequent information is available on 2; 1 has never had any symptoms or physical signs attributable to his lesion, which has remained unchanged in serial roentgenograms for four years and the disease of 1 has progressed since his graduation. Roentgenograms of the chest of 269 nurses were obtained and 52, or 19.3 per cent, had calcified nodules and 14, or 5.2 per cent, had doubtful apical shadows of not more than a few millimeters. In none of these did definite pulmonary infiltrations develop during the period of observation. Three nurses were found to have definite pulmonary lesions of the so-called adult type. They were all in the minimal stage when discovered; 2 of them were observed in the initial roentgenogram; thus the disease developed in only 1 of the 269 student nurses during their three years of training. The rates for the nurses and the medical students are considerably below those reported from similar institutions. The tuberculosis rate among the medical students, though slightly higher than that among the student nurses, is not significantly higher than the expected rate for their age group (average 22 years on admission).

Archives of Pathology, Chicago

31:665-840 (June) 1941

- Histology of Human Yellow Fever When Death Is Delayed. E. Villela, Rio de Janeiro, Brazil, South America.—p. 665.
Absorption of Liquid Petrolatum ("Mineral Oil") from Intestine: Histologic and Chemical Study. W. A. Stryker, Chicago.—p. 670.
Synovial Membrane in Charcot's Joint, with Special Reference to Golgi Apparatus and Synovial Fluid. E. S. J. King, Melbourne, Australia.—p. 693.
Spontaneous Fibromyoma in Female Guinea Pig. A. Lipschütz, Santiago, Chile, South America.—p. 702.
Relation of Vitamin E to Effectiveness of Testosterone Injected into Caponized Male Fowls. F. B. Adamstone, Urbana, Ill.—p. 706.
Cholesterol Content of Brain in Nutritional Encephalomalacia of Vitamin E-Deficient Chicks. F. B. Adamstone, Urbana, Ill.—p. 711.
Reticulum Cell Sarcoma Following Ulceration of Intestine in Vitamin E-Deficient Chicks. F. B. Adamstone, Urbana, Ill.—p. 717.
Relation of Vitamin E to Substances of Anthracene Group. F. B. Adamstone, Urbana, Ill.—p. 722.
Pigmented Villonodular Synovitis, Bursitis and Tenosynovitis. H. L. Jaffe, L. Liechtenstein and C. J. Sutro, New York.—p. 731.
Histologic Distribution of Vitamin A in Human Organs Under Normal and Under Pathologic Conditions. H. Popper, Chicago.—p. 766.

Archives of Physical Therapy, Chicago

22:261-314 (May) 1941

- Physiologic Implications of Physical Therapy. J. L. Halliday, Glasgow, Scotland.—p. 261.
Effect of Short Wave Diathermy on Arterial Pressures: Experimental Study. R. L. Bennett, E. C. Elkins and J. F. Herrick, Rochester, Minn.—p. 266.
Short Wave Diathermy in Treatment of Gingivitis. D. Kobak, Chicago.—p. 282.
*Symptomatic Relief in Chronic and Acute Arthritides by Histamine Iontophoresis. R. E. Reiley and M. E. Knapp, Minneapolis.—p. 288.
Histamine Iontophoresis for Arthritis.—Reiley and Knapp used histamine iontophoresis in the treatment of 40 ambulatory patients with arthritis. Complete relief was obtained by 23 patients, 12 experienced partial relief and 5 obtained no benefit.

Archives of Surgery, Chicago

42:969-1108 (June) 1941

- Destruction of Prothrombin and Storage of Vitamin K. J. G. Allen and C. Vermeulen, Chicago.—p. 969.
Hydatid Cyst of Liver. J. Arce, Buenos Aires, Argentina, South America.—p. 973.
*Progressive Postoperative Gangrene of Skin. H. Dodd, J. W. Heekes and H. Geiser, London, England.—p. 988.
*Metastasis of Primary Carcinoma of Breast, with Special Reference to Spleen, Adrenal Glands and Ovaries. O. Saphir and M. L. Parker, Chicago.—p. 1003.
Effects of Uncomplicated Hemoconcentration (Erythrocytosis), with Particular Reference to Shock. G. O. Wood, Rochester, Minn., and A. Blalock, Nashville, Tenn.—p. 1019.
Results of Removal of Acoustic Tumors by Unilateral Approach. W. E. Dandy, Baltimore.—p. 1026.
Visualization of Pulmonary Artery During Its Embolic Obstruction. J. H. Jessor and G. de Takáts, Chicago.—p. 1034.
Traumatic Vasospastic Dystrophy of Extremities. L. N. Atlas, Cleveland.—p. 1042.
X. The Inadequately Treated Cretin. I. P. Bronstein and W. H. Reals, Chicago.—p. 1048.
Comparison of Effects of Heat and Those of Cold in Prevention and Treatment of Shock. A. Blalock and M. F. Mason, Nashville, Tenn.—p. 1054.
Pelvic Actinomycosis. J. A. Tuta, Chicago.—p. 1060.
Basis and Treatment of Calcification of Tendinocapsular Tissues, Especially Supraspinatus Tendon. C. J. Sutro and L. J. Cohen, New York.—p. 1065.
*Renal Blood Flow and Sympathectomy in Hypertension. A. C. Corcoran and I. H. Page, Indianapolis.—p. 1072.
New Method for Physiologic Decompression After Gastric Operations: Preliminary Report. W. Raffel, Baltimore.—p. 1083.
*Early Rising and Ambulatory Activity After Operation a Means of Preventing Complications. D. J. Leithauser and H. L. Bergo, Detroit.—p. 1086.
Carcinoma of Cystic Duct: Report of Case and Comments on Ligation of Hepatic Artery in Man. A. Brunschwig and D. E. Clark, Chicago.—p. 1094.

Postoperative Gangrene of Skin.—Three cases of progressive postoperative gangrene of the skin reported by Dodd and his co-workers were the first to be seen in an active surgical experience of thirty years. The gangrene of 1 occurred after a suprapubic prostatectomy. Stewart-Wallace collected 37 cases in the period from 1908 to 1935; since then about 40 new cases have been reported, making a total of 87. In 71 cases gangrene developed after abdominal and thoracic visceral operations, and in 16 it followed minor parietal lesions. All of the lesions, with two exceptions (herniotomy and sympathectomy), were primarily due to mixed or single infections. There was a striking

predominance of male over female patients among the visceral group, the proportion being 53 to 17. The parietal lesions were distributed equally. The authors suggest that the male predominance is probably due to the fact that the skin of the male trunk is thicker, coarser and more hairy than that of the female. Thus, staphylococci are inevitably in the hair follicles and virulent streptococci can be introduced into the skin with a needle. Most of the patients (69 of 86) were more than 35 years of age, indicating that progressive postoperative gangrene of the skin is associated with declining vitality. General debility may therefore be a significant etiologic factor. In the 61 in which these data were available the gangrene was generally present within three weeks after operation. All treatment, except with the cautery, is useless. Of 22 fatalities the cautery was used in 8, while of 65 recoveries the wound was cauterized in 52. Two other methods of treatment have emerged; the use of maggots and excision by scalpel. Coakley and Klein succeeded in clearing up with maggots a condition which had persisted in spite of electrosurgical excision. Holman tried this therapy in 3 cases; in 1 the maggots would not stay in the wound and the patient died, and the 2 other patients recovered. Willard had success with a case of gangrene following appendectomy in which the entire lower abdominal wall was involved. He excised the area, the sloughs and the spreading edge in the skin with a scalpel, afterward dressing it daily with a watery suspension of zinc peroxide. Recovery is possible even after the gangrene has existed six months. Thirteen of the 22 patients died within three to nine months after the onset of the disease. Nineteen of the deaths occurred among the 69 patients who were 35 or more years of age. The death rate for visceral lesions was 24.3 per cent, as compared to 31.2 per cent for parietal conditions.

Metastasis from Carcinoma of Breast.—Saphir and Parker found the adrenals, ovaries and spleen to be involved in a surprisingly large percentage of the 43 necropsies on patients with carcinoma of the breast. The most common locations were the lungs (28 instances) and the liver (24 instances), while the next most common locations were the adrenals in 19 instances, the spleen in 10 and the ovaries in 7. These figures when compared with those of older publications are exceptionally high. No metastases were found in 3 instances. It is definitely not the type of carcinoma which is responsible for the shorter or longer survival period of the patient or for the appearance, spread and number of metastases. However, it was found, especially with ductal carcinomas and adenocarcinomas, that whenever the continuity of the lining cells of the glandular structures was interrupted or (as in ductal carcinomas) the integrity of islands of tumor cells was disturbed and individual, isolated tumor cells began to invade the surrounding mammary tissue, this phenomenon constituted the most definite sign of a high degree of malignant change. Isolated tumor cells exhibiting severe anaplasia, separated from primary basic structures of the individual carcinoma and singly or in small groups invading neighboring regions, must be considered the most important factor. Most of the tumors which produced metastases in the spleen, ovaries and adrenals showed an infiltration of isolated carcinoma cells outside the primary tumor. This was especially true for the mucinous carcinoma of the signet ring cell variety. The occasional small and clinically unnoticed carcinoma may give rise to widespread metastases. There were 4 such cases in their series. Such instances emphasize the importance of carefully palpating the breasts during general examination. There was no apparent difference in the survival of patients given postoperative radiation and of those not receiving such therapy.

Renal Blood Flow and Sympathectomy in Hypertension.—Corcoran and Page record observations on renal blood flow and hemodynamics in 2 patients with essential hypertension treated by Smithwick's method of abdominal sympathectomy. The clinical result of the operation in the first patient seems satisfactory, and, although sufficient time has not elapsed for the second patient to justify a prognosis, it seems likely that the result will be nearly as good. The second patient's maximal blood pressure in the recumbent position is no higher, and in the erect posture it is a great deal lower than it was before the operation. There is no evidence, however, of increased renal blood flow. On the contrary, it has decreased definitely in the

first patient and slightly in the second. The decreased renal blood flow in the former is accompanied with an increase of the filtration fraction, probably the result of increased efferent arteriolar constriction. The observations are in accord with experimental data and with those on the effect of renal denervation and sympathectomy in man. It is suggested that the decrease of arterial pressure in man which follows sympathectomy is an expression of denervation of the reactive visceral splanchnic innervation with resultant partial failure of venous return, most evident in the erect position. The decrease of venous return limits cardiac output and thus tends to decrease arterial pressure. The decrease of arterial pressure is in itself an adequate explanation of the clinical improvement which may follow such an operation, since it may prevent further spread of arteriolar lesions. Renal vasoconstriction in cases of hypertension is probably humoral rather than neurogenic in origin. Decreased arterial pressure occurring as a result of sympathectomy may arrest the progress of renal arteriosclerosis in a hypertensive patient. Since these arteriolar lesions may contribute to the release of renin and the activity of the renal vasopressor system, sympathectomy may interrupt for a time the progress of the disease.

Activity After Operation.—Leithauser and Bergo have performed 383 appendectomies since January 1938. There were 13 cases of ruptured appendix and spreading or generalized peritonitis. The average period of confinement to bed after operation for the other 370 patients was one and a half days and the average hospitalization two and three-tenths days. Fifteen patients had minor wound infections. These patients were not confined to bed for treatment but came to the office for dressings. There were no other complications. During the first twenty-four hours after operation the patients were given 2 ounces (60 cc.) of water every two hours and morphine as required to relieve pain. Enemas and cathartics were not given, but liquid petrolatum was prescribed on the third or fourth day. The patients were turned frequently in bed and were instructed to be active and to take deep breathing exercises at regular intervals. On the first postoperative day they were assisted in sitting on the edge of the bed (after assuming the right lateral position) and then in standing beside the bed for deep breathing exercises. While in each position they were instructed to take several deep inhalations and to cough. They were permitted to walk about the room and to sit in a chair for a few moments and then returned to bed. On returning to bed they sat on the edge of the bed and reclined on the right side. The patients left the hospital by automobile and presented themselves at the office on the sixth postoperative day. Most of the patients selected on the basis of their mental attitude and general well-being were permitted to do light work on the eighth day and to undertake heavy manual labor on the fourteenth. The authors were so impressed by the rapid recovery and freedom from complications of these patients that they have since used the method after other major surgical procedures. The results among 66 patients undergoing cholecystectomy, gastrectomy, gastroenterostomy, pelvic operations, splenectomy, thyroidectomy and other operations were also gratifying. Their average period of confinement to bed was two days and postoperative hospitalization nine days. No dehiscence, hernia, pneumonia, thrombophlebitis or other serious complications (except 1 instance of fatal hemorrhage) occurred. The method decreases atrophy from disuse of the sutured layers and may promote healing by improving the circulation in the area of the wound.

Connecticut State Medical Journal, Hartford

5:403-478 (June) 1941

- Weather and the Practice of Medicine. W. F. Petersen, Chicago.—p. 405.
Some Early Medical Teachers in Connecticut. H. B. Ferris, New Haven.—p. 411.
Gastrointestinal Disturbances in Nervous and Mental Disease. B. V. White, Hartford.—p. 425.
Neurologic Lesions That Give Gastric Symptoms. J. C. Fox Jr., New Haven.—p. 429.
Hypernephroma with Metastases to Scapula: Case Report. L. L. Tyler, Waterbury.—p. 432.
Psychiatric Considerations in the Selection of Military Personnel. L. H. Cohen, Norwich.—p. 453.

Illinois Medical Journal, Chicago

79:357-440 (May) 1941

- Organization and Function of Tumor Clinics in Voluntary Hospitals
H P Saunders, Chicago—p 409
- Public Health Aspects of Poliomyelitis in Illinois J S Altman, Springfield—p 412
- Paralytic Accidents Due to Rabies Vaccine L W Mason and R S Dille Evanston—p 414
- Cholecystitis and Cholelithiasis in Children Report of Case R A Tearnan, Decatur—p 418
- Selection of Cases for Splenectomy R L Haden, Cleveland—p 421
- High Spots in Bronchiectasis P B Goodwin, Peoria—p 426
- Adequate Control of Menopause G L Perusse Sr and G L Perusse Jr Chicago—p 430
- Sedation and Hypnosis with Minimal Side Reactions C J Molengraaf and H E Kimble Chicago—p 432
- Adequate Immobilization of Fractures of Leg W J Potts, Oak Park—p 434

Indiana State Medical Assn. Journal, Indianapolis

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- Obstetrics—Old and New H A Cowing, Muncie—p 287
- Early Physical Therapy in Treatment of Fractures of Surgical Neck of Humerus G J Garceau and Shirley Cogland, Indianapolis—p 293
- The Menopause D A Bickel, South Bend—p 295
- Endocervical Aspiration Monaldi Procedure F L Giles, Kealia, Hawaii—p 298
- Adequate Laboratory Service to Small Hospitals B W Rhamy, Fort Wayne—p 303
- Congo Red—Effective Chemotherapeutic Agent W L Green, Columbus—p 306
- Pneumonia M E Thomas, J Dorman and C J Clark, Minneapolis—p 308

Journal of Nutrition, Philadelphia

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- Sparing Action of Thiamine on Body Tissue Catabolism B Sure and M Dichek, Fayetteville, Ark—p 445
- Riboflavin as Factor in Economy of Food Utilization B Sure and M Dichek, with assistance of M M Citron Fayetteville Ark—p 453
- Vitamin A Deficiency Field Study in Newfoundland and Labrador D Steven and G Wald Cambridge, Mass—p 461
- Depletion of Tissue Glycogen During Fasting and Fatigue and Partial Recovery Without Food Pauline E Nutter, Rochester, N Y—p 477
- Glycogen Formation in Liver and Muscle from Glucose and Fructose After Extreme Muscular Exhaustion Pauline E Nutter and J R Murlin Rochester, N Y—p 489
- Studies on Vitamin C Metabolism of Four Preschool Children Milcent L Hathaway and Frieda L Meyer, Ithaca, N Y—p 503
- Biologic Response of Chickens to Certain Organic Acids and Salts with Particular Reference to Their Effect on Ossification J T Correll Kalamazoo, Mich—p 515
- Study of Vitamin C Nutrition in Group of School Children Part II Dietary Evaluation Elizabeth Murphy, Orono, Maine—p 527

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- Effect of Calcium and Phosphorus on Metabolism of Lead J B Shields and H H Mitchell, Urbana, Ill—p 541
- Respiratory Metabolism in Fructosuria Henderik J Rynbergen, W H Chambers and N R Blatherwick, New York—p 553
- *Calcium Requirement of Man Balance Studies on Seven Adults Julia Outhouse, Herta Breiter, Esther Rutherford Julia Dwight, Rosalind Mills and William Armstrong Urbana, Ill—p 565
- *Further Experiments on Calcium Requirement of Adult Man and Utilization of Calcium in Milk I R Steggerda and H H Mitchell, Urbana, Ill—p 577
- Distribution of Pyridoxine (Vitamin B₆) in Meat and Meat Products L M Henderson H A Wasmus and C A Elvehjem, Madison, Wis—p 589
- Sodium and Potassium Salts in Treatment of Experimental Diabetes and Diabetes Mellitus S Strouse, Florence Buel R Kay and D Drury, Los Angeles—p 599
- Requirement of Mouse for Pantothenic Acid and for New Factor of Vitamin B Complex J G Sandza and L R Cerecedo, New York—p 609
- Iron Metabolism in Human Subjects on Daily Intakes of Less Than 5 Mg Ruth M Leverson, Lincoln, Neb—p 617
- Choline Metabolism VII Some Dietary Factors Affecting Incidence and Severity of Hemorrhagic Degeneration in Young Rats W H Griffith and D J Mulford, St Louis—p 633
- Calcium Requirements of Adults—Outhouse and her associates determined the calcium requirement of 7 adults from 21 to 42 years of age The requirement was computed from data on calcium balances secured at levels of intake almost sufficient

to induce calcium equilibrium and from data concerning the extent to which each subject could utilize milk calcium The requirements, when based on weight, height and surface area, amounted to an average of 107 mg per kilogram These requirements, calculated on a weight basis of 70 Kg, average 752 mg This is 67 per cent greater than the 450 mg requirement suggested by Sherman, whose figure the authors believe is too low because it is predicated on the assumption that adults utilize 100 per cent of their dietary calcium

Calcium Requirement of Adult Man—Twenty-five further calcium balance periods from twelve to thirty-two days each were carried out by Steggerda and Mitchell on 9 adult men The data indicate that Sherman's estimate is too low by reason of the method of derivation, which neglects to consider the close positive correlation between intake and excretion The common procedure of estimating the prevalence of calcium undernutrition in a population by comparing the estimated calcium content of individual or family diets with an average requirement yields extremely dubious data, not only because of individual variability in requirement and utilization of the calcium from different foods, but also because of the great adaptive powers of the human organism It appears that in the presence of an inadequate supply of any nutrient, including calcium, the body can adjust itself to the situation either by a more economical use of the little available or by a lowering of its own requirements, so that eventually it comes into equilibrium with the limited food supply Only during this period of adjustment can the body be considered to be undernourished, since only then is it suffering a loss of nutriment When adaptation is complete, the body replaces from its restricted supply all losses of the nutrient from its body, and, unless some subsidiary ill effects ensue, it may be regarded as adequately nourished

Journal of Pharmacology & Exper. Therap., Baltimore

72:123-226 (June) 1941

- Study of Effects of Morphine and of Carbon Tetrachloride on Rate of Disappearance of Ethyl Isoamyl Barbituric Acid H J Tatum, D E Nelson and F L Kozelka, Madison, Wis—p 123
- Effects of Certain Drugs on Temperature Regulation and Changes in Their Toxicity in Rats Exposed to Cold J B Herrmann, New Haven, Conn—p 130
- Excretion of Combined Morphine in Tolerant and Nontolerant Dog V Thompson and L G Gross, Iowa City—p 138
- Toxicity and Local Anesthetic Activity of Three New Biphenyl Derivatives E J Fellows Philadelphia—p 146
- Effect of Atropine, Pilocarpine, Prostigmine, Eserine, Meeholyl and Ephedrine on Tonus and Contraction Mechanisms of Urinary Bladder, with Observations on Clinical Application of These Drugs H A Teitelbaum and O R Langworthy, Baltimore—p 152
- Influence of Gold Sodium Thiomalate (Myocrisin) on Prevention of Hemolytic Streptococcus Arthritis in Rats S Rothbard, D M Angevine and R L Cecil New York—p 164
- Effect of Barbituric and Thiobarbituric Acid Derivatives on Pyloric Sphincter and Stomach in Unanesthetized Dogs C M Gruber and C M Gruber Jr, Philadelphia—p 176
- Toxicity of Optically Inactive d and l Selenium Cysteine A L Moxon, K P Du Bois and R L Potter, Brookings S D—p 184
- Toxicity of Orally Ingested Tungsten Compounds in Rat F W Kinard and J Van De Erve Charleston S C—p 196
- Studies on Fat Metabolism and Susceptibility to Carbon Tetrachloride J C Forbes B E Leach and E L Outhouse, Richmond, Va—p 202
- Quantitative Effect of Fifteen Chemically Related Glycosides and Gennins on Embryonic Chick Heart A C DeGraff, New York, G H Paff and R A Lehman—p 211

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- Tetanus Analysis of Cases G Aud Louisville—p 218
- Clinical Study of Intestinal Parasites H H Ingling Springfield, Ohio—p 222

Maine Medical Association Journal, Portland

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- Arterial Deficiency in Legs (Including Diabetic Gangrene) J Homans, Boston—p 129
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- Perforative Diverticulitis of Sigmoid, Case Report D F Elcmore, Duxfield—p 135
- Alkaline Incrusted Cystitis R L Huntress, Portland—p 136

Medicine, Baltimore

20:145-250 (May) 1941

*Weil's Disease: Complete Review of American Literature and Abstract of World Literature; Seven Case Reports. W. F. Ashe, H. R. Pratt-Thomas and C. W. Kumpe, Cincinnati.—p. 145.

Action of Fluorine in Limiting Dental Caries. J. F. Volker and B. G. Bibby, Rochester, N. Y.—p. 211.

*Favism: Singular Disease Chiefly Affecting Red Blood Cells. A. Luisada, Waltham, Mass.—p. 229.

Weil's Disease.—Ashe and his associates believe that the lower reported incidence of Weil's disease in this country is not due entirely to its less frequent occurrence but that probably because of its protean nature it is not always diagnosed. Most of the American cases occur during June, July, August and September; this concurs with the maximal European incidence, which is in July, August and September. Only 1 nonicteric case has been reported in this country. In Europe, as the disease became better known, the incidence of nonicteric cases rose rapidly, until now analysis shows that not more than 50 per cent have jaundice. As in typhoid, the procedures necessary to diagnose Weil's disease vary and depend on the duration of symptoms. For therapeutic reasons it is most desirable to demonstrate the organism directly in the blood stream in the first week of the disease, when specific therapy (immune serum) is most valuable. As yet American drug houses have not prepared such serums and cannot be expected to do so until city and state laboratories make available the necessary diagnostic procedures and the true incidence of the disease in the United States becomes known. Until immune serums appear on the American market, supportive therapy and convalescent serum or whole blood transfusions should be used when possible. The National Institute of Health at Washington, D. C., is the only public laboratory equipped to do thorough diagnostic and investigative studies on this disease. Weil's disease is primarily an occupational disease now compensable in New York State. The authors report 7 cases of Weil's disease seen within the last year at the Cincinnati General Hospital. All the patients were jaundiced, 5 recovered and 2 died. The postmortem demonstration of organisms in the 2 patients who died confirmed the diagnosis. In the nonfatal cases the diagnosis was proved by specific agglutinations.

Favism.—Luisada suggests that in the future more cases of favism (only 3 have been reported so far) will be recognized in the United States. A large Mediterranean population lives in certain parts of the United States. Fava beans are cultivated extensively in some states (mainly New York, New Jersey, Illinois and California). They are a staple article of diet, being even imported as canned food from Italy. The environment, inhalation, is definitely related to the chief clinical syndromes of favism. Fields of fava beans constitute the usual surroundings in which attacks occur. The pollen is sticky and has no wide dissemination. Attacks caused by ingestion may occur anywhere, but they are more frequent where the custom to consume this vegetable is not occasional. The plant *Vicia faba* (called in Italian and Portuguese "fava," known in English as the "horse bean," "broad bean" or "fava bean") is the cause of the attacks. The first symptoms after inhalation of principles originated in the flowers or plant of the fava bean usually occur from a few minutes to some hours. After ingestion of fava beans the time element is from five to twenty-four hours. In the sudden attacks caused by inhalation the first symptom is dizziness, sometimes reaching the stage of a collapse. More usually malaise, headache, dizziness and nausea appear gradually. Then repeated yawning, vomiting, chill, pallor and pain in the lumbar region are followed by high fever. The more specific symptoms, hemoglobinuria in from five to thirty hours and icterus in a few hours, appear later. Typical attacks last for from two to six days. Death occurs almost only in children and this during the first two days, seldom on the third day. According to Fermi, the mortality for children is 8 per cent. Of the three theories (parasitic, toxic and allergic) advanced for favism the allergic theory is the most commonly advocated and most logical. Luisada confirmed the allergic mechanisms by pointing out the short duration of the incubation period, the innocuousness of the substance for most individuals and the extremely small doses which may provoke an attack. The

allergic theory has since been suggested by many other investigators. Sensitization can occur in persons of any age. Desensitization occurs usually for a short time during and after attacks. Further studies are necessary for the complete explanation of hemoglobinuria. Treatment of the hemolytic attack is important, since it often endangers life and always causes severe anemia. Some of the therapeutic agents used with good results have been normal horse serum, horse serum and mother's blood, mother's blood and intramuscular or intravenous injection of magnesium thiosulfate, epinephrine intramuscularly and calcium gluconate intravenously. Iron may be given, but liver therapy is not indicated. In the absence of specific treatment the most effective preventive measure is the avoidance of contact with fava proteins, especially from April to August.

Michigan State Medical Society Journal, Muskegon

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Dermatitis and Eczema: Industrial Aspects. J. G. Downing, Boston.—p. 265.

Forensic Psychiatry in Michigan. R. M. Patterson, Ann Arbor.—p. 271.

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Type III Pneumococcus Meningitis: Recovery Following Sulfathiazole. G. B. Myers, J. M. Robb and M. Clapper, Detroit.—p. 280.

Radiation Therapy in Treatment of Malignant Disease of Genitourinary Tract. H. G. Siehler, Lansing.—p. 284.

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Problems of Ventilation for Vessels of the Navy. A. R. Behrke Jr.—p. 633.

Treatment of Rattlesnake Bite. F. Speer.—p. 640.

Study of Syphilis as Etiologic Factor in Arteriosclerosis and Arterial Hypertension. H. C. Harris.—p. 642.

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Aid in Differential Diagnosis of Pulmonary Neoplasm. J. L. Dixon.—p. 661.

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Clinical Toxicity of Sulfanilamide and Its Related Drugs. R. J. Wysocki, Omaha.—p. 220.

New Orleans Medical and Surgical Journal

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Northwest Medicine, Seattle

40:109-158 (April) 1941

- Factors Responsible for Present Day Low Mortality in Acute Ileus. A. O. Whipple, New York.—p. 112.
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Gallstone Obstructing Duodenum. M. F. Fuller, Aberdeen, Wash.—p. 180.

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- *Traumatic Complete Heart Block of Eighteen Years' Duration, with Review of Literature. T. H. Coffen, H. P. Rush and R. F. Miller, Portland, Ore.—p. 195.
Thromboangiitis Obliterans and Atherosclerosis: Case Report. T. J. Fatherree and C. Hurst, Soap Lake, Wash.—p. 200.
Treatment of Gonorrhea in Male with Sulfathiazole. J. G. Strohm, W. E. Nielsen and P. B. Potampa, Portland, Ore.—p. 202.
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Serum Reactions. J. D. LeMar, Omaha.—p. 208.
Review of Pneumococcal Meningitis. H. D. Pass, Seattle.—p. 210.
Vitamin B₁ in Chronic Bronchitis. O. J. Morehead, Ritzville, Wash.—p. 212.
The Allergic Nose. N. W. Klein, Seattle.—p. 213.
Metastasis of Carcinoma of Kidney to Heart and Thyroid: Report of Case. W. B. Dublin, Fort Steilacoom, Wash.—p. 215.

Traumatic Heart Block.—Coffen and his associates report the case of a boy who at 3 years of age (in 1922) sustained a severe fall and from then on his mother noticed that his pulse was slow. At examination in 1929 the boy presented a complete auriculoventricular block. He has been seen frequently since 1929 and, while the heart block persists, the boy, now 21, has developed normally, is physically active and has no symptoms of cardiac strain or Stokes-Adams syndrome. In the last ten years he has been examined at least once a year. There have been no changes in the electrocardiogram during this time. The case is unique because (1) it is the only case the authors are able to find in which auriculoventricular block occurred from injury in childhood, (2) there are only 5 other cases in which auriculoventricular block resulted from nonpenetrating injury, (3) it has persisted for eighteen years in their patient and (4) there has been no evidence of heart failure or Stokes-Adams syndrome.

Oklahoma State Medical Assn. Jour., Oklahoma City

34:139-188 (April) 1941

- Intracavitary X Radiation. L. S. McAlister, Muskogee.—p. 139.
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Associated Thymus Syndrome and Birth Injuries. H. C. Graham, Tulsa.—p. 148.
Phorias: Diagnosis and Treatment. J. P. Luton, Oklahoma City.—p. 150.
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Neuroses of Pharynx. H. Ford, Oklahoma City.—p. 156.

34:189-234 (May) 1941

- Some Mechanical Factors Involved in Production of Hiatus Hernia of Stomach. E. G. Hyatt, Tulsa.—p. 194.
Reducing Mortality of Cancer. J. B. Hix, Altus.—p. 199.
Acute Retrobulbar Neuritis. D. L. Edwards, Tulsa.—p. 201.
Varicose Veins of Lower Extremities. J. F. Wolff, Oklahoma City.—p. 204.
Clinical Significance of Delayed Osseous Development. B. H. Nicholson, Oklahoma City.—p. 206.

Southern Medical Journal, Birmingham, Ala.

34:559-680 (June) 1941. Partial Index

- *Familial Darier's Disease (Keratosis Follicularis). J. M. Hitch, Raleigh, N. C.; J. L. Callaway, Durham, N. C., and V. Moseley, Orangeburg, S. C.—p. 578.
Value of Weltmann Serum Coagulation Reaction in Allergic Disease. Susan Coons Dees, Durham, N. C.—p. 586.
Chronic or Healed Pylonephritis in Negro Women Dying with Hypertensive Heart Disease: Comparative Incidence of This Lesion in Histologic Sections. Thelma B. Dunn, Washington, D. C.—p. 593.
*Acute Osteomyelitis with Staphylococcus Septicemia: Clinical Report on Use of Chemotherapy and Staphylococcus Antitoxin in Its Treatment. L. D. Baker, Durham, N. C.—p. 619.
Observations on Etiologic Relationship of Gastric Juice (Intrinsic Factor) and Foods (Extrinsic Factor) to Blood Pressure. H. M. Doles, Norfolk, Va.—p. 627.
Analysis of Some Cases of Gastrointestinal Allergy Associated with Organic Disease. Gertrude Holmes, Greenville, S. C.—p. 634.
Treatment of Peptic Ulcer with a Magma of Magnesium Trisilicate: Preliminary Report. D. N. Silverman and R. A. Katz, New Orleans.—p. 638.
*Abdominal Arterial Apoplexy. G. H. Bunch and L. E. Madden, Columbia, S. C.—p. 643.
Recurrent Gastrointestinal Disturbances of Early Infancy. W. A. McGee, Richmond, Va.—p. 648.
Encephalitis, Encephalomyelitis and Myelitis: Review of Cases. N. Gotten and G. J. Levy, Memphis, Tenn.—p. 658.
Significance of Collapse Therapy in the Mississippi State Program for the Control of Tuberculosis. J. S. Harter, Sanatorium, Miss.—p. 665.
Modern Standards and Trends in Medical Education. R. U. Patterson, Oklahoma City.—p. 668.

Familial Darier's Disease.—Hitch and his collaborators report the occurrence of Darier's disease in 14 members of one family. Only 6 of the affected members are still alive. The authors were told that the disease in the deceased relatives was identical in regard both to history and to appearance. The family is intelligent and observant and has lived within a restricted region for several generations, so that the information is considered reliable. This family has yielded the largest number of cases of the disease on record. Complete data have been obtained on six generations. There are in all 52 blood kin on whom the authors have sufficient data to be reasonably sure of the presence or absence of this affliction. Of 27 males 4, and of 25 females 10 showed the disease. The average age of the affected dead individuals was 59 as against 47 years for those free of the condition. An examination of the family chart and of those previously reported will show that in familial cases the aberration is transmitted through and to both sexes. The successive appearance of the disease in each generation and its absence in the offspring of normal members rule out the possibility that a simple recessive characteristic is being dealt with. All evidence to date indicates that in the familial cases the abnormality is caused by a single dominant non-sex linked gene. For the isolated case of Darier's disease they believe that the genetic theory which probably best explains this situation is that of "irregular dominance." According to this concept the expression of a certain gene may be modified by another gene or group of genes. The modifiers may enhance or suppress the expression of the character. A gene which is usually dominant may be present in an individual and yet not be phenotypically visible because it has been suppressed by a modifier. It is most probable that one of these situations exists in Darier's disease. In the sporadic patient it must be assumed that the combination is present in toto but is not accessible to examination in other members of his family. The treatment of this condition is uniformly unsatisfactory. Since approximately 50 per cent of the offspring of diseased members will be affected and transmit the disease in similar ratio, avoidance of children by the intelligent patient and sterilization of the unintelligent or uncooperative patient appear justified.

Osteomyelitis and Staphylococcal Septicemia.—Results obtained at Duke Hospital in the treatment of acute osteomyelitis with staphylococcal septicemia suggest that with the exception of sulfathiazole the sulfonamides are contraindicated. The local use of sulfathiazole appears to be beneficial. There were 143 instances of staphylococcal (86 with osteomyelitis) among 827 proved cases of staphylococcal disease. The present study is concerned primarily with osteomyelitis. Of the 143 instances of staphylococcal septicemia 79 patients died, giving a total mortality rate of 54.5 per cent. Of the 67 patients not treated with staphylococcus antitoxin 51 died and 16 survived, a mortality

rate of 76 per cent; whereas of the 50 patients treated with staphylococcus antitoxin without chemotherapy 16 died and 34 survived, a mortality rate of 32 per cent. Chemotherapy other than sulfathiazole was combined with the antitoxin in the treatment of 16 patients; 5 survived and 11 died. Sulfathiazole was combined with antitoxin in the treatment of 10 patients; 9 survived and 1 died. Of the 86 patients with proved staphylococcal septicemia with osteomyelitis 33 did not receive staphylococcus antitoxin; 11 of these survived and 22 died, a mortality rate of 66.6 per cent; 1 of the 11 who survived received sulfathiazole. Thirty-five patients were treated with antitoxin without chemotherapy; of these 27 survived and 8 died, a mortality rate of 22.5 per cent. There were 9 patients with osteomyelitis and staphylococcal septicemia who were treated with antitoxin and sulfathiazole; 8 survived and 1 died. Of 9 patients treated with antitoxin and chemotherapy other than sulfathiazole, 6 died and 3 survived. In hemolytic staphylococcus infections the ratio of mature to immature polymorphonuclear leukocytes in the circulating blood can be used to estimate the degree of toxemia and to determine the need for antitoxin. Highly purified antitoxin serum can be administered intravenously if the necessary precautions to determine the patient's sensitivity have been taken. Sulfanilamide and sulfapyridine are contraindicated.

Abdominal Arterial Apoplexy.—Bunch and Madden report the seventeenth case of abdominal apoplexy. The diagnosis was made from the history of marked arteriosclerosis in an elderly (62 years of age) Negro having abdominal crises with shock, followed by abdominal swelling, and from the finding of intraperitoneal blood by paracentesis, with a hemoglobin content higher than that of the capillary blood. Treatment immediately following the abdominal attack is that of internal hemorrhage. After reaction from shock has taken place, enough blood should be given by repeated transfusions to raise the blood pressure and the hemoglobin index to within operable limits. At laparotomy, if the patient is a woman of childbearing age, the pelvis should be examined for tubal abortion or rupture. In men without aneurysm or malignant neoplasms, spontaneous rupture of the spleen, the liver or the pancreas is the most common cause of nontraumatic intra-abdominal bleeding. In spontaneous arterial rupture the bleeding point should be found and hemorrhage controlled by ligature or suture, and if neither is possible by gauze pack. Every 1 of the 16 cases of spontaneous rupture of a visceral artery with massive hemoperitoneum reported in the literature has had arteriosclerosis as a base.

Tennessee State Medical Assn. Journal, Nashville 34:161-204 (May) 1941

- *Treatment of Penetrating Wounds of Brain. C. Pitcher, Nashville.—p. 166.
- Treatment of Bacillary Dysentery with Sulfathiazole: Report of Nineteen Cases. R. E. Ching, O. S. Warr Jr. and J. B. Witherington, Memphis.—p. 171.
- The Physicians in the National Defense. A. G. Love, Washington, D. C.—p. 178.
- Remarks. F. H. Lahey, Boston.—p. 184.
- Pediatric Emergencies. K. M. Buck, Memphis.—p. 186.
- Allergy and Its Relation to Sinusitis. C. H. Glover, Memphis.—p. 188.

Treatment of Penetrating Wounds of Brain.—Pitcher points out that most penetrating wounds of the brain in civilian and in military life are cared for by the general surgeon, who should remember that every compound fracture of the skull is potentially a penetrating wound of the brain. Treatment should not be attempted without adequate neurosurgical facilities. First aid should consist of superficial cleansing and shaving, control of hemorrhage and treatment of shock. Most important is rapid transportation to a point at which operation can be performed. During transportation the head should be moderately elevated (unless shock is present). Evacuation of the wounded by airplane, as it is now practiced by the German army, has met with considerable success. However, in open head wounds the low atmospheric pressure of high altitudes may increase cerebral herniation. In the author's experiments, immediate removal of foreign bodies in twelve hours resulted in 75 per cent recovery and their removal after twenty-four hours resulted in 75 per cent fatality. The complete removal of foreign bodies is not always feasible or wise. Great depth of penetration or lodg-

ment in the opposite hemisphere from the point of entrance renders removal difficult, and the damage caused thereby is too great to justify the procedure. The bullet itself is not often a source of pathogenic bacteria. Contamination is much more likely to arise from fragments of skin, hair, clothing, dirt and other material that has been driven in. If cleansing is complete and damaged tissue thoroughly removed, and if the wound is closed within a few hours the danger of a retained projectile is minimized. The brain tolerates foreign bodies well. The author cites 2 cases which support the rational advice of Cushing that foreign bodies should be removed only if their removal does not increase the existing cerebral damage. The location and depth of the wound influence not only the degree of residual disability, if the patient recovers, but his chances of recovery. In addition to the high mortality resulting from laceration of large arteries or the great venous sinuses, penetration of the ventricular system (particularly if early operation is not possible) and injury of the brain stem, midbrain or hypothalamic region are of grave prognostic importance; they usually terminate fatally. These structures may be unexpectedly involved by seeming distant wounds. For patients not seen until frank infection is present (or in the borderline period from twelve to twenty-four hours when infection may develop) immediate open drainage offers the only hope of avoiding a fatal outcome. The bony opening should be from 3 to 4 cm. in diameter, the dura left open and a soft tube or even small gauze packing inserted to the bottom of the cavity. The once dreaded cerebral fungus will develop. However, the danger from it is in reality small if drainage is adequate and the cerebral infection becomes localized. For the patient seen after healing of such an infection because of convulsions, paralyzes or other disabling symptoms, excision of the cicatricial mass is indicated. The author states that, for traumatic neurosurgery, carefully trained and experienced operative teams and elaborate equipment, though desirable, are not essential. However, two devices, a strong suction apparatus and a high frequency, damped-wave electro-surgical unit, are almost indispensable. Without them adequate débridement and control of hemorrhage are all but impossible. All macerated scalp tissue, free fragments of bone, devitalized brain tissue and accessible foreign material should be removed, but the injury already sustained should not be increased. Gentle irrigation will "float up" all but the largest foreign fragments, and careful suction will cleanse the tract and facilitate complete hemostasis. Temporary gentle packing with moist cotton may be useful. Gauze should never be used on the brain. All wounds free of infection should be closed tightly with fine silk. A drain inserted into the brain is an open invitation to infecting organisms, and it increases the danger of cerebral herniation. If loss of skin has been extensive, it may be possible to close the defect by "relaxation incisions." The exact field of usefulness and the true effectiveness of the sulfonamide drugs in craniocerebral wounds contaminated by bacteria have not yet been finally determined. The Canadian and German armies are using them for prophylaxis and therapy. Extensive studies on the subject are in progress.

Virginia Medical Monthly, Richmond 68:313-374 (June) 1941

- Pollen Survey of Islands of Bermuda. L. N. Gay, H. Curtis and T. Norris, Baltimore.—p. 313.
- Mediastinal Emphysema and Idiopathic Spontaneous Pneumothorax. M. M. Pinckney, Richmond.—p. 315.
- Unusual Tumors of Brain, with Emphasis on Pathologic and Diagnostic Pitfalls: Report of Five Cases. J. M. Meredith, University.—p. 317.
- Diagnosis and Selection of Treatment for Carcinoma of Larynx. E. T. Gatewood, Richmond.—p. 330.
- Intestinal Implantation with *Lactobacillus Acidophilus* by Use of *Bacillus Acidophilus* Milk. J. D. Willis, Roanoke.—p. 336.
- Abnormal Sexual Reactions. J. N. Williams, Richmond.—p. 338.
- Quinine as Prophylactic Against Influenza: Study of 6,500 Quarantined and 6,500 Nonquarantined Individuals During Influenza Epidemic, January 1941. A. G. Schnurman, Radford.—p. 341.
- Birth Injuries from the Viewpoint of the Obstetrician. W. D. S. Richmond.—p. 342.
- Oral Primary Foci of Infection from Dental Viewpoint. F. G. Roanoke.—p. 347.
- Medical Treatment of Nontuberculous Infections of Kidney and Urinary Tract. R. D. Bates Jr., Richmond.—p. 350.
- Acute Hemolytic Anemia and Renal Insufficiency of Sulfanilamide and Sulfapyridine Therapy. G. B. Craddock, Lynchburg.—p. 353.
- Platypondyly. H. G. Hadley, Washington, D. C.—p. 357.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted

British Journal of Experimental Pathology, London
22:59-110 (April) 1941

- Serologic Reactions of Viruses Causing Tobacco Necrosis F C Bawden—p 59
Healing of Experimental Wounds Treated with Epicutan L Dann, A Glücksmann and Katharine Tansley—p 70
Fibrotic Nodules in Tracheobronchial Lymph Glands of Mouse Produced by Breathing Precipitated Silica J. A. Campbell—p 76
Observations on Factors Concerned in Sedimentation of Erythrocytes T N. Fraser and J. B. Rennie—p 81
Spread of Infection from Respiratory Tract of Ferret J Transmission of Influenza A Virus C H. Andrews and R E. Glover—p 91
Id. II Association of Influenza A Virus and Streptococcus Group C R. E. Glover—p 98
Tyraminase Activity in Hypertensive Animal G M. Brown and B G Maegraith—p 108

British Medical Journal, London
1:617-658 (April 26) 1941

- *Successful Grafting of Adrenal Gland in Case of Addison's Disease F. Katz and T. Mainzer—p 617.
Treatment of 100 War Wounds and Burns. J. A. Ross and K. T. Hulbert—p 618
Simple Method of Estimating Prothrombin Capillary Blood J Innes and L S P Davidson—p 621.
Mule Spinner's Cancer E M. Brockbank—p 622.
Derris Root Treatment of Scabies. L. Saunders—p 624
Subcutaneous Ligation of Varicose Veins H S Russell—p 626

Grafting of Adrenal in Addison's Disease.—Katz and Mainzer discovered only 5 instances of successful adrenal grafting in Addison's disease. They add to this list a sixth instance of successful grafting in an indisputable case of Addison's disease. The patient was under their care for nearly three years before operation and for fifteen months after. Just before the operation the amount of extract necessary was 40 cc daily, but still the blood pressure dropped to 70 mm. In this crisis it was decided to graft into the patient the left adrenal gland of a man who had just died from a cerebral tumor. The donor was 52 years of age and belonged to the same blood group. The graft was made into the abdominal musculature on the left side. Soon after operation symptoms of adrenal insufficiency, such as increased somnolence, uncontrollable vomiting, frequent diarrheal stools, collapse of circulation and fall of blood pressure to 60 mm., reached their climax despite daily administration of extract up to 80 cc and that of salt up to 50 Gm. The condition improved within three days of the operation, the dose of extract was reduced and none was given after the seventh day. The patient declared that she felt well. She left the hospital on the sixth postoperative day. During the next two months the blood pressure varied between 115 and 135 mm., the color of the skin, which was yellowish with a clay tinge, became lighter and the freckle-like spots present on the backs of her hands and face were no longer so intensely colored. Any great exertion or excitement always produced slight somnolence and pain in the back. During an attack of influenza, when the blood pressure dropped to 80 mm., from 10 to 20 cc. of adrenal extract was necessary for a few days.

1:659-698 (May 3) 1941

- Injury and Internal Disease. G. F. Walker—p 659.
*Reactions After Transfusion of Stored Blood. L C O Jewesbury—p 663
Carriers of Tuberculosis. J. Maxwell—p 665.
Pelvic Abscesses: Diagnosis and Treatment H Dodd—p 667.
Agranulocytosis in Infant. Case; Recovery H C. Barlow—p. 669.

1:699-738 (May 10) 1941

- Pulmonary Tuberculosis in Recruits. Further Experience in Survey by Method of Miniature Radiography. D Galbraith—p 699
Bacteriologic Examinations Supplementing Radiologic Survey of Australium Imperial Force: Preliminary Report R Webster—p 701.
Blood Platelets and Splenic Extracts G M. Watson—p 704.
Evaluation of Hysterical Symptoms in Service Patients W P. Mallinson—p 706
Stability of Tetanus Antitoxin Under Suboptimal Storage Conditions C R Ames—p 709

Reactions After Transfusion of Stored Blood.—Jewesbury points out two complications which may develop after transfusion of fresh or stored blood as a result of an incomplete understanding of the technic of blood transfusion. They

are pulmonary edema with cardiac failure due to overloading of the circulation of a patient whose heart is already embarrassed, and renal failure due to transfusion of incompatible blood. The reaction more usually apt to occur after a transfusion is a febrile one. Transfusion reactions are divided into grade 1, a rise of temperature to 100 F., with no other objective features; grade 2, a similar or greater rise of temperature, with a subjective feeling of cold and shivering, and grade 3, fever with a definite rigor. The average incidence of grade 3 reactions in three careful investigations on the use of fresh blood for 700 patients was 7.9 per cent. After transfusion of stored blood the average incidence of grade 3 reactions among more than 5,000 transfusions was 5.6 per cent. The use of 700 bottles of stored blood (average age of the blood was ten and eight-tenths days) from the North-East London depot gave 11.3 per cent grade 1, 4.4 per cent grade 2 and 4.1 per cent grade 3 reactions. In this series the author observed that the average age of the blood causing grade 2 reactions was thirteen and four-tenths days, while that of the blood causing grade 3 reactions was twelve and seven-tenths days. There were 4 instances of urticaria resulting from transfusion of stored blood. Six cases of jaundice seemed to be the result of transfusion of somewhat older blood, since all but one of the bloods used was stored for fourteen or more days. Since even fresh blood contains many aged erythrocytes, rapid destruction of these is to be expected after their transfusion. The degree of destruction increases with the age of the blood. As a routine blood preserved for more than three weeks should not be used, since both in vitro and in vivo hemolysis may result in transient jaundice and possibly be the cause of other reactions. Bushby, Kekwick, Marriott and Whitby have shown that the increase in plasma bilirubin of the recipient is due not to free hemoglobin in the transfused blood but to in vivo hemolysis of transfused cells. It is likely that the febrile reactions after transfusion of old blood are due to products of disruption and degeneration of erythrocytes rather than to the free hemoglobin present in solution. The preservative solutions should be those most likely to prevent the early breakdown of erythrocytes. Hemolysis is impeded by dextrose. In the transfusion of 50 bottles of blood (33 transfusions) preserved for an average of eleven and one-tenth days without dextrose the results were, respectively, 18.2, 15.1 and 12.1 per cent grade 1, 2 and 3 reactions. There were also 1 instance of urticaria and 1 of jaundice. The ready availability of stored blood outweighs any slightly smaller rise of hemoglobin percentage that may occur in the recipient. The disadvantage of stored blood resolves itself about hemolysis, but with modifications of the preservative solution the life of the erythrocytes can be further prolonged. There is now less need to preserve emergency supplies of blood for long periods, as plasma or serum, which can be stored for months, can be given as an emergency measure when whole stored blood is not available.

Glasgow Medical Journal
17:141-172 (May) 1941

- *Glycosuria in Recruits A A T. Peel and Mary W. Peel—p. 141.

Glycosuria in Recruits.—The Peels state that 115 instances of glycosuria have been referred to them by three medical boards during thirteen months. They encountered cases which cast doubt on the wisdom of placing too much reliance on a sugar tolerance curve in differentiating between diabetic and innocent glycosurias. The fact that emotion influences the suprarenals, the thyroid and other endocrine glands indicates that it is also probably capable of producing temporary alterations in the sugar tolerance curve. Diet affects the curve, a factor difficult to assess in recruits. A full medical history and a clinical examination are imperative, and a specimen of blood should be taken forty-five minutes after the test dose of dextrose as well as the routine specimens; without this specimen, a diagnosis of renal glycosuria is not justified and a diagnosis of "lag curve" may be mistaken. Diabetic curves (more than 180 mg. in all specimens or more than 200 mg. in one) were obtained in 43 of the 115 recruits, borderline diabetic curves in 9 and lag curves in 12, and 59 had low renal thresholds (blood sugar below 180 mg. per hundred cubic centimeters). Two of the 59 had diabetic curves, 4 borderline diabetic curves and 4

MacLean's lag curve, and 3 others were excluded from consideration because of insufficient data. Among the 46 remaining recruits with renal glycosuria the blood sugar curve of 30 was normal and 16 had abnormal features, although the maximal level never exceeded 180 mg. per hundred cubic centimeters. Of the 30 having renal glycosuria with a normal blood sugar curve, 14 were admitted because of symptoms suggesting diabetes; 4 denying thirst, polyuria and loss of weight were admitted because of other suggestive symptoms, and 12 had no symptoms suggestive of diabetes, but 2 had chronic nephritis. One had fever and tachycardia, 1 a gross cranial deformity and 1 a history of attacks of colic; 1 was below average weight but of good "physique," the general condition of 1 was "fair" and the general condition of 5 was good. Of the 16 recruits having renal glycosuria with abnormal blood sugar curves, 4 had symptoms suggesting true diabetes, 4 seemed susceptible to infections and 8 patients had no diabetic symptoms, but 5 of them suffered from some other form of ill health: anemia, hypertension and albuminuria, slight cardiac enlargement of doubtful cause or nervousness and tremulousness. Nineteen of the 43 with diabetic curves admitted diabetic symptoms; 9 denied thirst, polyuria and loss of weight but seemed to have a susceptibility to boils or cutaneous infections, 15 denied all diabetic symptoms, including susceptibility to boils, but 5 complained of neurasthenia, duodenal ulcer, chronic otitis media or acute rheumatism and pleurisy. No compunction was felt in rejecting as unfit for service those patients who admitted diabetic symptoms and those who suffered from some other complaint. Only 2 of the 9 recruits with borderline diabetic curves admitted diabetic symptoms. Of these 9, 4 had low renal thresholds. Nine of the 12 with lag curves admitted diabetic symptoms on cross examination. The prevalence of thirst, polyuria or loss of weight among these 12 exceeded that of patients with a diabetic type of curve.

Journal Obst. & Gynaec. of Brit. Empire, Manchester

48:1-140 (Feb.) 1941

- Normal Menopause. H. C. McLaren.—p. 1.
Induced Menopause. H. C. McLaren.—p. 23.
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48:141-292 (April) 1941

- Histidine Metabolism in Normal and Toxemic Pregnancy: Excretion of Histidine in Normal Pregnancy Urine and in Urine of Patients with Toxemia of Pregnancy. R. Kapeller-Adler.—p. 141.
Significance of Isolation of Histamine from Urine in Toxemia of Pregnancy. R. Kapeller-Adler.—p. 155.
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Puerperal Retention of Urine Causing Traumatic Rupture of Bladder and Death: Case. A. M. Claye, with pathologic notes by N. Lissimore.—p. 235.
Carcinoma of Cervix in Girl 15 Years of Age. W. F. Shaw.—p. 239.
Carcinoma of Body of Uterus: Unusual Case. A. M. Claye.—p. 243.
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Lancet, London

1:623-654 (May 17) 1941

- Absorption of Bacteria, Toxins and Snake Venoms from Tissues: Importance of Lymphatic Circulation. J. M. Barnes and J. Trueta.—p. 623.
Tuberculous Obstructive Emphysema in Children. B. Barsby.—p. 627.
Recovery from Infection of Subacute Bacterial Endocarditis Without Sulfonamides. F. P. Weber.—p. 630.
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Effects of Air Raids on Incidence of Fits in Epileptics. J. Shafar.—p. 632.

Medical Journal of Australia, Sydney

1:537-564 (May 3) 1941

- Modern Aspects of Puerperal Sepsis. A. M. Hill.—p. 537.
Report on Cerebrospinal Meningitis. M. J. Holmes.—p. 541.
*Meningococcal Infection, with Special Reference to Meningococcal Septicemia. G. C. Moss.—p. 548.

1:565-596 (May 10) 1941

- Minor Surgical Affections of Anal Canal. H. C. R. Darling.—p. 565.
Changes in Muscle Produced by Nerve Degeneration. J. C. Eccles.—p. 573.
Normal Apical Precordial Lead of Electrocardiogram. K. Madsen.—p. 575.
Right Sided Visceroptosis. A. E. Lee and L. J. J. Nye.—p. 578.

1:597-628 (May 17) 1941

- Toxemic Pregnancy in Relation to Subsequent Pregnancies, with Special Reference to Renal Function Tests. Vera I. Krieger and R. M. Rome.—p. 597.
Note on Influence of Surgical Operations on Diphtheria Antitoxin Content of Blood Serum. E. Singer.—p. 613.

Meningococcal Infection.—Moss states that failure to obtain organisms in blood cultures is of no significance when typical signs and symptoms of meningococcal septicemia are present. Treatment should not be withheld too long. More widespread knowledge of the significance of the typical rash in conjunction with other symptoms will lead to a diagnosis in many cases at the first examination. This is of great importance today, as sulfapyridine is capable of bringing about a speedy cure. This prompt therapeutic response is an additional diagnostic feature. Results with sulfapyridine in meningococcal meningitis have been spectacular, and it was to be expected that they would be even better in the slow forms of septicemia without meningeal localization. A disease that may entail weeks or months of illness and may end in meningitis or even meningococcal endocarditis with or without other complications can scarcely be called benign in spite of a strong tendency to spontaneous cure. For immunologic reasons more cases are likely to be encountered in the later stages of an epidemic. His first case was one of chronic meningococcal septicemia, lasting at least thirty-three days and terminating in meningitis. Progress was uninterrupted except for nausea from the sulfapyridine. The patient was allowed up on the fourteenth day and, at the time of writing, is quite well. The second patient was treated with sulfapyridine for six days, receiving a total of 23 Gm. of the drug. Thirteen days after chemotherapy was instituted examination of a nasopharyngeal swab did not reveal *Neisseria meningitidis*. The onset of subacute and chronic forms of meningococemia is usually, but not invariably, sudden, with malaise, shivering, pains in the limbs, especially the legs, and recurrent headache of varying intensity. This is true also of meningeal signs. Pain in the extremities is not necessarily confined to joints; a joint effusion may or may not be present. With the shivering and rise of temperature there may be a profuse cutaneous reaction and attendant discomfort, yet the patient may feel quite well with the fall of temperature. This comparative well-being has impressed most of those who have seen such patients. The temperature may resemble that of malaria or it may be of the common "septic" type. The rash of meningococemia, once seen, is not likely to be forgotten. Minor variations exist, but in general the same basic pattern is present. The lesions consist of pink or red macules and papules from a pin's head to a threepenny piece in size; a few larger lesions are often present. The smaller ones are roughly circular; the larger ones are often longer than they are broad. The large ones are usually tender. The limbs are usually most affected; but lesions are commonly seen on the back and chest, sometimes the abdomen and more rarely the face. The color may be uniform or the center more vivid. Complete disappearance with pressure is the rule, except when there is a petechia in the center. Isolated petechiae may coexist. Tender papules or nodes may be found on the shins. They may be confused with erythema nodosum or erythema multiforme. The lesions usually fade in a day or so, some completely, or a faint brown stain of some may persist for some days. At intervals, often corresponding with fever, other lesions may appear. Herpes labialis carries as much diagnostic weight as it does in meningitis.

Schweizerische medizinische Wochenschrift, Basel
71:169-192 (Feb. 22) 1941

- Oxygen Capacity of Hemoglobin in Conserved Blood. H. Fischer and O. Schürch.—p. 169.
- Utilizability of Conserved Blood as Determined in Point of Time by Loss of Potassium from Erythrocytes. H. Fischer.—p. 173.
- *Oral Chemotherapy in Gonorrhea Based on Personal Experiences. G. Miescher and A. Schnetz.—p. 175.
- Age Determination of Spinal Fractures. W. Jaeger.—p. 179.
- Inoperable Carcinoma and Its Treatment. A. I. Jarotzky.—p. 181.

Sulfathiazole for Gonorrhea.—Miescher and Schnetz present conclusions regarding the effect of single and fractionated doses of sulfathiazole in the treatment of gonorrhea. They found that while single massive doses (3 Gm.) yielded cures amounting to 89.5 per cent (thirty-four cures in 38 cases), fractionated doses, distributed over one, two or six days, gave still better results, namely 97.5 per cent (forty-one cures in 42 cases, in which 1 Gm. was administered seven times for one day at intervals of two hours); 98 per cent (fifty-five cures in 56 cases, in which 1 Gm. was administered five times daily for two days), and 97.5 per cent (eighty-one cures in 83 cases, in which 1 Gm. was administered seven, six and five times daily during six days). Experiments undertaken in 35 cases by increasing the single massive dose from 3 Gm. to 5 Gm. not only failed to produce better results but seemed to suggest chemotherapeutic "fastness," though blood and urine analyses did not indicate a decrease of absorption or an increase of excretion. In additional appraisals of the therapeutic value of single and fractionated doses involving uncomplicated gonorrhea, the authors found that a minimal daily dose of 0.5 Gm. given daily for four days achieved the same results as the same total doses (2 Gm.) given at one time (seven cures in 9 cases). No close connection was observed to exist between drug concentration levels in the blood and recovery. However, higher concentration levels more frequently, on the average, accompanied the cure. Laboratory tests for bacterial chemoresistance in cases which did not respond to treatment demonstrated a temporary bacteriostatic effect of the drug in the face of bacterial multiplication observable in the pus. Chemosensitivity was seen to be extremely variable in different strains, fluctuating strongly within concentration limits of 1:1,000,000 and 1:600. The most chemoresistant strain was derived from a patient who recovered. Cultures on ascitic agar likewise showed considerable variation with regard to the antibacterial potency of different serums. Some gonococci were almost serum fast, others showed extraordinary serum sensitivity. According to the authors, the therapeutic effect of sulfathiazole must be sought not only in the combined interplay of high drug concentration levels, bacterial chemosensitivity and the antibacterial properties of the serum but also in other factors, among which the individual degree of immunity seems to be the most important. Massive single doses may constitute the dosage of choice for patients who cannot be relied on to carry out instructions.

71:213-236 (March 8) 1941. Partial Index

- *Local Application of Sulfathiazole in Treatment of Accidental Trauma. W. Brunner and E. Schläpfer.—p. 213.
- *Experiences with Sulfathiazole in Obstetrics and Gynecology. H. Winzeler.—p. 217.
- *Local Sulfathiazole Therapy in Gynecology. J. Flagg and P. Koenig.—p. 220.
- Local Sulfonamide Therapy and Sulfathiazole Inunction. A. Schnieper.—p. 222.

Local Sulfathiazole Therapy in Wounds.—Brunner and Schläpfer discuss the therapeutic value of locally applied sulfathiazole as observed in 109 cases of trauma with varying degrees of tissue damage, the majority of which were head wounds (51) and face and limb cuts (18). The drug was used in powdered form (20 cases) and in combination with boric acid (89 cases) in a 20 per cent concentration. This was insufflated on and into the wound. The quantity of the drug used ranged between less than 1 and 7 Gm., according to the nature of the lesion. Wound excision was not practiced; ragged edges were merely trimmed. Immobilization and

serum prophylaxis were regularly employed. No inflammatory reactions, no cellular or tissue damage and no delay in recovery were noted. No difference in results was seen when sulfathiazole was used alone or with boric acid. Microscopic tissue examination after administration disclosed distinct bacteriostatic and bactericidal effects. The growth of hemolytic streptococci, *Bacillus mesentericus* and *Bacillus subtilis* was controlled by the drug. Hemolytic staphylococcus aureus, non-hemolytic streptococci, *Bacterium coli* and enterostreptococci were reduced respectively in virulence to 21, 36, 16.6 and 33 per cent and Fränkel-Welchii bacillus to 13 per cent. The therapeutic value of sulfathiazole used locally lies in the antibacterial effect produced by the combination of high concentrations with slow solubility, which is suited to the latent period preceding bacterial invasion of the tissue. Hence the sooner the drug is applied to the wound the better. The authors regard a 20 per cent strength as too powerful for puncture wounds with narrow openings and recommend injections in aqueous solution or a 2 to 5 per cent administration of sodium sulfathiazole. In multiple lesions 0.5 Gm. per kilogram of body weight is well tolerated locally and systemically.

Sulfathiazole Therapy in Obstetrics and Gynecology.—Winzeler's report covers 200 cases observed during a period of eight months. In order to determine the prophylactic value of sulfathiazole in normal births, the author treated a number of pregnant women and controls with a total dosage of 10 Gm. during five days. In another series of 120 pregnancies (half acting as controls) he increased the total dosage to 11.1 Gm. In both series, judged by fever indications and the number of days intervening between rising after delivery and discharge from the hospital, with urinalyses made after delivery and a week later, no difference in results could be determined. In 40 puerperal cases with labor complications (forceps delivery [15], intrauterine intervention [14], cesarean section [11]) concentrated doses ranging between 17 and 26 Gm. and given in accordance with the same criteria, the action of sulfathiazole was regarded as favorable. In a gynecologic group of about 20, the rarity of septic abortion and the absence of bacillary indications in the blood did not furnish enough data for therapeutic appraisal. Sulfathiazole administered *sub partu* was found in the blood and amniotic fluid of the child, but no regular connection between the sulfathiazole levels of the child and the mother could be established. There was little secretion of the drug in the mother's milk. Numerous blood and urine tests showed no hemopoietic or renal damage. No serious sequels resulted from doses as high as 60 Gm. The author does not consider the use of sulfathiazole indicated in normal delivery. The drug seems to possess considerable therapeutic value in cases of light and mildly severe puerperal infection. Its efficacy in grave cases is limited, since secondary foci have already established themselves. The drug should not be given until signs of infection appear. Sulfathiazole was found to be readily tolerated, of moderate toxicity and well adapted for prolonged use, as in cystitis.

Local Sulfathiazole Therapy in Gynecologic Cases.—

Flagg and Koenig report 14 cases of cervicitis, 9 of which were associated with adnexitis, in which sulfathiazole could be applied locally with sufficient regularity to bring about 9 cures and 5 improvements in leukorrheal and other vaginal discharges, together with relief from pain. Nine additional cases were favorably affected in spite of irregular or incomplete medication. The dosage was put up in special form and inserted into the cervical canal adjacent to the infected glands in quantities and at intervals adjusted to the individual case. Cervicitis was due thrice to childbirth, twice to abortion and four times to gonorrhea; in the other cases the etiologic factor was unknown. Cures were effected even in chronic cases (four years, twelve years). The authors were induced to experiment with local medication by the fact that oral use had often yielded only slight and temporary relief in spite of heavy dosage. They found that the local application not only spared the general system the pharmacologic effects but achieved results in much smaller quantities in cases in which much

larger locally administered quantities had failed. A case is cited in which 0.6 Gm. given locally cured where a total of 40 Gm. given orally had proved unavailing. In 8 of the 9 cases of adnexitis, the disappearance of leukorrhea was accompanied with adnexal amelioration, obviously because the drug exerted its potency on the adnexa by way of utero-ovarian lymphatics. Complications were few. First applications, however, seemed to cause a temporary mechanical irritation quite apart from their antibacterial action.

Policlinico, Rome

47:341-384 (Sept.) 1940. Med. Sec. Partial Index

*Lymphatic Tissues of Rhinopharynx in Hypertrophy of Thymus After Roentgen Irradiation of Thymus. S. Lentini and A. Cirenei.—p. 359.

Hypertrophy of Thymus.—Lentini and Cirenei observed 19 prepuberal children with hypertrophy of the thymus and the thymic syndrome of obesity, genital hypoplasia, retarded puberty and intelligence, and hypertrophy of the lymphatic and adenoid tissue of the nasopharynx. Pharyngoscopic examination and biopsy of the palatine tonsil were made before roentgen irradiations of the thymus, repeated four or five months after the last irradiation. The patients did not have opotherapy or other treatment in the course of the observation. Irradiations were given every other day in doses of from 90 to 100 roentgens for each irradiation, up to a total of four irradiations, this being followed by twenty days of rest and a new course until three had been given. Irradiations were given at a distance of 30 cm. with rays obtained with 150 to 180 kilowatts and 4 milliamperes, through a filter of 0.5 mm. of copper and 0.3 mm. of aluminum. Care was taken to shield the tonsillar region from the irradiating conc. Except for 1 syphilitic child, treatment resulted in marked improvement of the general, physical and mental condition of the patients as manifested by loss of fat, increase in stature, growth of genitalia, initiation of puberty, normal behavior and intelligence. The nasopharyngeal lymphatic tissues regressed proportionally to the general improvement. The authors reported in a previous article that the removal of the thymus in dogs caused regression of nasopharyngeal lymphatic tissues. Clinical observations agree with the animal experiments. The authors point out the advantages of roentgen irradiation of the hypertrophied thymus. The syndrome caused by thymic hypertrophy as well as the hypertrophy of the nasopharyngeal lymphatic and adenoid tissue are controlled by irradiation.

48:337-384 (Feb. 24) 1941. Pract. Sec. Partial Index

*Roentgen Irradiations of Thymus in Pende's Hyperthymic Syndrome: Technic and Results. G. A. Calabrese.—p. 337.

Roentgen Treatment of Hyperthymism.—Calabrese describes the mental, genital and somatic syndrome caused by hyperfunction of the thymus occurring in childhood. It becomes more evident at puberty. The syndrome consists of arrest of the psychic and somatic development of the person, psychic and somatic infantilism, obesity, retardation of puberty, reversal of sexual characteristics and similar changes. There is a hyperplasia of the lymphatic tissue, especially of the thymus, hypoplasia of the genital organs and cryptorchism. The thymus is enlarged, but the enlargement cannot be recognized roentgenoscopically or by insufflation of air or oxygen into the anterior mediastinum. The diagnosis is made from clinical symptoms and signs of enlargement of the thymus obtained on percussion of the thymus area. The treatment consists of roentgen irradiation of the region of the thymus, given in four series twenty days apart. Each series consists of four exposures of 80 or 100 roentgens given every other day. The author administered this treatment to 377 patients (335 boys and 42 girls) of ages from 4 to 12. Endocrine and physical therapy had failed previously. The roentgen treatment alone, or with temporary administration of glandular preparations, brought about improvement in the general condition of all patients and a complete cure in 90 per cent. By cure the author means disappearance of the abnormal and reestablishment of the normal general, genital, somatic, sexual and mental states. Menstruation appeared in girls of

puberal age or before they reached the age of 20 within two months after treatment was begun, and after two months in girls over 20. The treatment failed in a case associated with hypophysial nanism. Forty-three boys presented cryptorchism, which was unilateral in 3 cases. Five disappeared from control after having had three courses of roentgen irradiations, 29 were cured after three months of treatment and in 4 the testis descended before the first three months of treatment. The latter failed in 3 cases in adults. Results for the entire group were satisfactory, especially with regard to amenorrhea and cryptorchism.

Sperimentale, Florence

95:1-126 (March) 1941. Partial Index

*Liver in Chronic Tuberculous Enteritis: Anatomic and Microscopic Study. F. Parini.—p. 65.

Liver in Chronic Tuberculous Enteritis.—Parini reports a microscopic study of livers from 50 cadavers of patients dying from grave chronic ulcerative tuberculosis and from 50 dying from pulmonary and extrapulmonary tuberculosis without intestinal involvement. Cases of peritonitis, tuberculous lymphadenitis of the upper abdomen and tuberculous lesions of the pancreas or the spleen were excluded. He found fatty degeneration of the parenchyma of the liver of portal origin in all cases of ulcerative intestinal tuberculosis. It was selectively located at the periphery of the lobe in the areas supplied by the portal venules. The lesion occupied about one third of a lobe. In some cases, however, the entire lobe was involved by fatty degeneration with older lesions at the periphery. Fatty degeneration of the liver of portal origin paralleled the acuteness of the intestinal tuberculosis. In all cases of chronic intestinal tuberculosis but 13 peripheral fatty degeneration of the liver coexisted with some other alteration of the structure such as stasis in the hepatic venules in 8 cases, diffuse generalized miliary tuberculosis of the liver without miliary tuberculosis of other organs in 15 and with involvement of other organs in 5, interstitial miliary tuberculosis in 4 and early subacute interstitial hepatitis in 5. In the presence of stasis there are two zones of fatty degeneration, the perilobar caused by tubercle bacilli or their toxins by way of the portal vein, and the central due to stasis. Diffuse miliary tuberculosis of the liver without miliary tuberculosis of other structures is of portal origin and is to be differentiated from miliary tuberculosis of the liver of arterial origin. In the portal type the tubercles are minute, evenly distributed, recently formed and of a necrotic exudative type. The massive passage of tuberculous material from the intestine to the liver through the portal blood with consequent isolated miliary tuberculosis of the liver takes place only when the defense mechanism of the liver abruptly fails shortly before death. Chronic hepatitis of a sclerotic type does not complicate chronic intestinal tuberculosis the course of which is rapid. Death takes place before establishment of chronic disease of the liver.

Anales de la Facultad de Medicina de Montevideo

26:1-314 (Nos. 1-2-3-4) 1941. Partial Index

*Pigmented Secretions of the Breast Simulating Bleeding Breast. C. Stajano.—p. 243.

Pigmented Secretions of the Breast.—Stajano observed 20 cases of pigmented secretion of the breast simulating a bleeding breast and persistence for from six to fifteen years. The secretion increased near or after menstruation in some of the cases and was associated with premenstrual pain in others. Benign macroscopic or microscopic cysts existed in all. Cytologic examination of smears of secretions failed to show either fresh or modified erythrocytes. The secretions were negative for blood and hemoglobin, and positive for melanin. They contained large numbers of phagocytes and a few lymphocytes. They did not contain bacteria. The prognosis is good. Opotherapy is of no effect. The successful treatment consisted in improving the general resistance by administration of calcium, strychnine and arsenic. Involution following surgical castration brought about cessation of the secretion.

Deutsche Zeitschrift für Chirurgie, Berlin

253:435-562 (May 23) 1940

- *Problem of Relationship Between Exophthalmic Goiter and Thymus. P. Sunder-Plassmann.—p. 435.
- Aseptic Necrosis of Caput Femoris After Fracture of Neck of Femur in Young Persons and Its Relationship to Pertb's Disease. K. Bornbusch.—p. 458.
- New Method for Surgical Collapse of Thorax: Suggestion for Operation. G. Tschmarke.—p. 472.
- Etiology of So-Called Ileitis Terminalis Stenosans. A. Slany.—p. 495.
- Choriocarcinoma in Man with Cutaneous Metastases. K. Rothmund.—p. 513.
- Nailing of Medial Fracture of Neck of Femur. W. Heim.—p. 523.
- Operation for Cancer of Rectum. C. van Gelderen.—p. 540.
- Possibility of Using Light Metals in Surgery (Metallic Magnesium as Stimulus for New Bone Formation). O. Maier.—p. 552.
- Injury of Esophagus by Dull Force. R. Haecker.—p. 557.

Exophthalmic Goiter and Thymus.—Sunder-Plassmann states that he has come to realize through his own studies that some of the contradictions encountered in literature with regard to the role of the thymus in exophthalmic goiter are only apparent and in reality reflect different phases of a single biologic mechanism in the center of which is the thyroid, the thymus and the sympathetic and the parasympathetic with a special neurohormonal cell system. He had observed in thyroids of the newborn cell complexes with light nuclei which in his animal studies he had designated as neurohormonal cells. They are closely connected morphologically as well as functionally with the sympathetic portion of the vegetative nervous system. In dissecting the thyroid and the thymus of the newborn the author frequently observed narrow connections between the two. These connections appear as whitish, delicate formations which the author designated as the white "thymus street" of the thyroid. Serial sections of this structure reveal many large epithelioid cells with light nuclei. These neurohormonal cells represent a unique cell system controlled by the vegetative nervous system and connecting the thyroid and the thymus in a biologic complex mechanism. The thymus undergoes regressive changes, which commence when the thyroid is at the height of activity. The regression is characterized by the presence of a large number of Hassall's corpuscles and by the predominance of the lymphocytic cortex tissue. The medulla and cortex of the thymus seem to play entirely different roles. The medulla forms the epithelioid neurohormonal cells, which are largely dependent on the parasympathetic elements of the vegetative nervous system. The function of this neurohormonal cell system is the absorption of the colloid, thus providing the organism with thyroid secretion. The thymus cortex appears to have the function of fixing such colloid as is secreted too suddenly or in excessive quantities. It seems probable that the thymus serves chiefly the thyroid, with which it has close embryologic relationships. Further evidence of fixation of the thyroid secretion by the lymphocytic cortex of the thymus is offered by the occurrence of atrophy of the thymus after thyroidectomy and the fact that this atrophy can be transformed into hypertrophy, particularly affecting the thymic cortex, if thyroidectomized patients are fed thyroid extracts. The fact that the thymus may atrophy after prolonged activation of the thyroid, as well as in its complete absence, is only an apparent contradiction. In the delicately adjusted biologic mechanism of the neurohormonal thyroid-thymus system, manifestations of irritation, reactive changes and functional impairment may become manifest in the different and not always the same links of the chain and thus cannot be expected in all cases. Reactive changes in the thymus are closely connected with the activity of the thyroid and its effects in the organism. Adrenals and gonads probably play a secondary role in the neurohormonal thyroid-thymus system.

Klinische Wochenschrift, Berlin

20:33-64 (Jan. 11) 1941. Partial Index

- Vitamin B₂ Content and Tissue Respiration in Brain. H. Leemann and E. Pichler.—p. 36.
- Bone Regeneration. G. Levander.—p. 40.
- *Comparative Tissue Thermometry. O. Lippross.—p. 49.
- *Significance of Serum Heating Test for Diagnosis of Carcinoma. W. Zunke.—p. 53.

Comparative Tissue Thermometry.—Lippross discusses the technic of tissue thermometry and its superiority for diagnostic purposes over the usual skin thermometry. Tissue thermometry is done by means of an apparatus employing thermoneedles which are, preferably, thrust into the musculature of the calf of the leg and the ball of the hallus. (The lowest temperature in the tissues was found in the latter area; the highest [102.2 to 104 F.] in the liver.) "Comparative tissue thermometry" is defined as occurring when similar anatomic parts of the two lower extremities are measured simultaneously. Four punctures are required, which are said not to be particularly painful after some skill in applying the technic is attained. Single tissue tests, however, are often not sufficient. Tissue thermometry seeks (1) to ascertain whether pathologic conditions capable of thermometric determination exist at all and whether the index is higher in the calf than in the hallus area and (2) to institute special diagnostic tests in accordance with the temperature differences between the calf and the hallus index observed on the same side of the body. The author by this method was able to demonstrate especially low temperatures in the hallus ball tissue with serious circulatory disturbances in the toe joints of healthy persons of asthenic build. The subjective feeling of cold feet was rarely in keeping with objective measurements. Two cases will indicate the difference in accuracy between tissue and skin thermomeasurements. Sympathectomy performed for thromboangiitis obliterans showed, two months later, a 1.5 C. higher skin temperature in the affected limb. Two years later no difference was observed on the two sides. Tissue thermometry, however, disclosed a difference of from 5 to 6 C. in the hallus ball area. In a case of intermittent claudication lasting ten years sympathectomy was contraindicated because no comparative difference in the skin temperature on the two sides could be observed. Tissue thermometry, however, disclosed a considerable regulatory dysfunction in one member. Thermometric tests included cold and hot baths, with the legs kept out of the water to permit uninterrupted tissue examination. The author believes that this technic represents progress in the functional diagnosis of pathologic conditions in the lower extremities. More deeply situated tissue is not subject to numerous external factors, hence permits a more exact measurement and affords a better understanding of the regulatory processes of the body. This technic makes possible not only the progressive measurement of the temperature of the different tissues and their fluctuation under certain circumstances but also the simultaneous measurement of the temperatures of these tissues.

Serum Heating Test for Diagnosis of Carcinoma.—Zunke employed Kürten's technic for the detection of carcinoma in 531 cases involving 891 double tests and retests. According to Kürten, when 1 cc. of human blood serum is slowly heated over a burner in a small test tube, two reactions will occur: either (type I) the albumins will precipitate and adhere to the sides of the tube, at the same time releasing an opalescent fatty salt solution, or (type II) the total serum will coagulate and remain in this condition in spite of continued heating. The first reaction characterizes predominantly the serums of healthy as well as ill persons. The second is found in the serums of subjects with malignant tumors and in some cases of acute and chronic disease. However, Kürten found that on the subsidence of the acute stage the serum would give a type I reaction. In 492 of 531 of Zunke's serum specimens, heating tests and retests confirmed clinical or postmortem diagnosis. In the remaining cases, operation or necropsy could not be performed or the patients could not be observed long enough. Forty-six cases involved carcinoma. Coagulation type I in these was observed only four times, all in patients previously roentgenologically treated. Four hundred and thirty-seven were nontumor cases; 43 of these, the majority pneumonia (15), showed type II reaction. Lobar pneumonia invariably gave a type II reaction in the acute stage and a type I reaction during subsidence. Like Kürten, Zunke found that the serum of carcinomatous subjects and those affected with certain acute and chronic diseases presented a type II coagulation. The diagnostic value of

the serum test was not impaired when clotted or centrifugated serum, refrigerated for a few days, was used; hemolytic serum, however, proved unreliable. The author believes that Kürten's technic employed routinely may be of value in discovering the possible presence of carcinoma, especially in cases in which more complicated cancer examinations are in order. The technic, simple as it is, needs to be carried out with the greatest care. Otherwise the results will be vitiated.

Münchener medizinische Wochenschrift, Munich

88:117-148 (Jan. 31) 1941. Partial Index

*The Problem of Carcinoma. W. Brünings.—p. 117.

Frostbites. F. Bering.—p. 123.

Food Poisoning by Means of Duck Eggs. H. Müller.—p. 125.

Albers-Schönberg Marble Bone Diseases. H. Kramer.—p. 132.

Problem of Carcinoma.—Brünings, working on the theory that neuroendocrine disturbances of the carbohydrate metabolism may be etiologically involved in carcinoma, attacked the problem by combining a dietary regimen poor in carbohydrates with insulin therapy in 14 cases of nasolaryngologic cancer, only 1 of which was associated with diabetes. The carcinomas selected were those in hopeless cases but susceptible of being viewed, together with their metastatic invasion of the lymph nodes, macroscopically and the tissues of which could be excised for microscopic study. In all cases, general as well as local, amelioration was temporarily observed, varying from arrest of tumor growth to total macroscopic disappearance of the tumor and its metastases. Body weight invariably increased in the first weeks, slowly falling after from one to two months but rarely below initial levels. This improvement lasted from two to three months, after which a reactivation of tumor growth set in and a tendency to necrosis, pain and hemorrhages. Further treatments were unavailing. Under the microscope, in most cases, the reduction of malignant growth turned out to be only a quantitative diminution; excised tumor portions showed degenerate cancer cells. No essential modification of insulin tolerance was observed, nor subjective or objective damage due to hypoglycemia. The tolerance limits varied considerably in different persons. If primary tumor did not promptly respond to the therapy, roentgen irradiation was at once instituted. In 2 cases in which the combined treatments had already clearly brought about tumor recession, it was noted that on withdrawal of the insulin the malignant condition was stimulated to new life or that the tumor-retarding protection had ceased. The same observations were made in 2 other cases in which only the diet had been administered for ten days. Even a combined therapy in which insulin dosage was pushed to the individual limits of tolerance yielded no information as to the effect of insulin, or of any unknown factor in insulin, on carcinoma. The author believes that a causal connection exists between carcinoma and carbohydrate metabolism which needs to be further investigated. The favorable results temporarily obtained lead him to think that combined dietary and endocrine treatments may be of value in aiding diagnosis when carcinoma is suspected, in conditioning the patient for an operation to be performed and as an adjuvant of roentgen therapy.

Nervenarzt, Berlin

13:337-384 (Aug. 15) 1940

Geography of Suicide. H. W. Gruhle.—p. 337.

*Postoperative Reduction of Intracranial Pressure After Brain Operations: Pathophysiology of Cerebrospinal Fluid System. H. Sprockhoff.—p. 341.

Percutaneous Arteriography. P. Duus and W. Behrmann.—p. 350.

Differential Diagnosis of Pathologic Changes of Sella Turcica in Roentgenogram. H. Greving.—p. 353.

*Cerebrospinal Fluid in Multiple Sclerosis. O. Seuberling.—p. 359.

Intracranial Pressure After Brain Operations.—Sprockhoff points out that, in some patients who have undergone surgical intervention on the brain, the formation of cerebrospinal fluid does not keep pace with the resorption, and the result is deficiency and hypotension of the fluid. He lists 11 cases in which there was such postoperative hypotension.

With the exception of 2 patients who had undergone removal of the squama occipitalis, all had supratentorial defects of the cranium. The patients have headache and are restless and irritable before the hypotensive state develops. The sensorium becomes dulled; slight rigidity of the neck, fatigue, lassitude and nausea develop. There usually is a mild hyperthermia and hyperpnea, but the blood pressure and the pulse remain normal. Pallor is occasionally seen. If there is a cranial defect, retraction is noticeable. The pupils become rigid, and reflexes abolished. Respiration becomes snoring and approaches the Cheyne-Stokes type. This comatose condition may also develop without the prodromal signs. The hypotensive condition does not always lead to complete coma. Differentiation from increased intracranial pressure (brain swelling arachnoiditis) may be difficult, particularly if there is no cranial defect. The proof that the described clinical symptoms are produced by hypotension in the fluid space is furnished by the fact that intraspinal administration of physiologic solution of sodium chloride promptly counteracts the acute symptoms. If too much fluid is introduced, the skin over the cranial defect will bulge and the undesirable tension may have to be counteracted by another puncture. On the other hand, the retraction in the defect may recur after the filling so that intraspinal injection has to be repeated. This instability shows that the lack of fluid is not the only cause but that there is also a disturbance in the dynamic equilibrium between formation and absorption of the cerebrospinal fluid. For this reason filling of the fluid space is not sufficient. As few punctures as possible should be made, because every puncture that is not required to counteract acute hypotension or excess pressure retards the regulation. It is necessary to aid the organism in maintaining normal pressure. Fluid should be given in generous quantities; in the mild cases by mouth, in the severe cases by intravenous infusion of sodium chloride or dextrose solutions. The author supported the oral administration of fluid with caffeine in order to increase the blood perfusion of the choroid plexus and thereby stimulate the production of the cerebrospinal fluid. Since erect posture promotes absorption of the cerebrospinal fluid and favors decrease in pressure, this posture should be avoided in hypotension, contrary to the general rule in postoperative treatment. Patients with hypotensive conditions complain of headaches which do not differ from those caused by increased intracranial pressure except that they cannot be improved by the withdrawal of spinal fluid but require intraspinal administration of fluid. The prolonged headaches complained of after lumbar puncture by psychopathic persons or by those with weak sympathetic nervous systems are probably of this hypotensive type. Two of the author's patients had chronic hypotensive symptoms, suffering for years with severe headaches. Both had considerable defects in the cranium and, having noticed that greater severity of headaches was accompanied by greater retraction, they requested plastic repair, after which they were free from complaints. Reduced secretion is the decisive factor, and this in turn must be due to impairment of the plexus. Various causes, such as senile involution, diffuse atrophy of the brain, prolonged existence of internal hydrocephalus, reduced blood pressure and general exsiccation may be responsible. The author points out that some employ an exsiccating preoperative treatment in order to avoid postoperative swelling of the brain. This preoperative exsiccation proved its value. The author does not reject the method but emphasizes that it should be used with discrimination, for, if it is employed in all cases, postoperative hypotension will be more frequent. It should not be employed in cases in which the previous history or clinical aspects indicate a tendency to hypotension.

Cerebrospinal Fluid in Multiple Sclerosis.—Seuberling reports the serologic picture of cerebrospinal fluid in 140 cases of multiple sclerosis observed at the neurologic clinic of the university of Würzburg. The results obtained, together with those of three other German clinics, suggest that the cerebrospinal fluid of 75 per cent of patients with definitely established multiple sclerosis shows pathologic changes. The author was

able to corroborate the observation of several other investigators that a correlation exists between changes in the cerebrospinal fluid and severity of the multiple sclerosis. Pathologic alterations of the cerebrospinal fluid occurred twice as frequently in patients with severe multiple sclerosis as in those with a mild form. During the acute attack only 2 per cent of the fluids were normal. The largest percentage of normal fluids was obtained from patients whose disease had lasted less than a year. In the course of the first attack 98 per cent of the patients show pathologic changes in the cerebrospinal fluid, but in more than one half of these the fluid becomes normal later on. In patients with chronic multiple sclerosis the fluid is much less likely to become normal after an exacerbation. Efforts have been made at the author's clinic to develop a specific reaction for multiple sclerosis by paying particular attention to the lipid metabolism and the lipolytic ferments in the cerebrospinal fluid. No characteristic sign or behavior has thus far been detected. Spinal punctures have not been found harmful at the author's clinic except for occasional retention of urine for about a day. Punctures should not be made in cases of multiple sclerosis in which foci are suspected to exist on the floor of the fourth ventricle and in which bulbar and vagal symptoms appear. The author observed a coma of several days' duration following a puncture in a case of this type.

Zeitschrift für Kinderheilkunde, Berlin

62:1-110 (Aug. 9) 1940

Disturbance of Cysteine-Cystine Metabolism in Young Children and Its Relation to Dwarfism and Renal Rickets. H.-D. Pache.—p. 1.

Congenital Erythroblastoses. J. Hattler.—p. 16.

*Therapeutic Success of Three Different Treatments of Epidemic Meningitis. H. Boehneke.—p. 29.

Study of Phosphorus Metabolism in Congenital Athyrosis. B. Breitbarth.—p. 52.

Modification of Blood Composition in Toxic Forms of Diphtheria, Scarlet Fever, Dysentery and Endocarditis by Desoxycorticosterone Acetate. W. Semmann.—p. 65.

Incidence, Course and Treatment of Primary Tuberculosis of School Children and Adolescents. A. Viethen.—p. 80.

Connection Between Scleroderma and Progeria. B. Müller-Hess.—p. 96.

*Can Skimmed Milk Be Rendered Antirachitic by Irradiation? K. Scheer.—p. 104.

Therapy of Epidemic Meningitis.—Boehneke compares 44 cases of epidemic meningitis in which serum therapy was employed with 46 in which serum and a sulfanilamide preparation were used. There were 30 fatalities among those treated with serum, a mortality of 68 per cent. In the 46 cases treated since 1938 in which a sulfanilamide preparation was given in addition to the serum, the mortality rate was reduced to 8.6 per cent. Although the two groups were treated in different periods and the age distribution was slightly different, the author thinks that this does not explain the difference in the mortality rates. The sulfanilamide preparations used were protosil album and albid (\equiv acetylsulfanilamide). Sulfanilamide was given in the first 20 of the 46 cases and acetylsulfanilamide in the other 26. The author prefers the latter preparation because it can be given in concentrated solution by intravenous, intramuscular and intraspinal injection and because its toxicity is less than that of sulfanilamide. Another advantage of acetylsulfanilamide especially important in meningitis is that it readily passes the cerebrospinal barrier. Acetylsulfanilamide proved more effective. Of the 20 cases in which serum and sulfanilamide was used, 4 had a fatal outcome, whereas among the 26 treated with serum plus acetylsulfanilamide there were no fatalities. The author concludes that the treatment with meningococcus serum plus acetylsulfanilamide is the method of choice in epidemic meningitis.

Irradiation of Skimmed Milk.—Scheer points out that a considerable portion of the total cholesterol content of milk is combined with the proteins, particularly lactalbumin. He deduces that the antirachitic power of irradiated milk is not limited to its fat content. Thus it seemed of interest to determine whether skimmed milk can be rendered antirachitic by irradiation. From comparative experiments with irradiated whole milk and irradiated skimmed milk he learned that irradi-

ated skimmed milk has an antirachitic action which will cure a severe florid rickets, although the time required for such cure is somewhat longer than with the use of irradiated whole milk.

Bulletin of the Naval Medical Association, Tokyo

30:137-196 (March 15) 1941. Partial Index

*Prophylaxis for Diphtheria Among Navy Men. K. Kariya, K. Yamamoto and T. Shibata.—p. 137.

*Report of Necropsy on Pellagra. M. Nakamura, C. Hamada and H. Oriuchi.—p. 179.

Diphtheria Prophylaxis for Sailors.—Kariya and his associates found positive Schick reactions in 5 per cent of the entire crew below the rank of noncommissioned officers on a cruiser. After ascertaining the probable freedom from sensitivity by means of the Moloney test in these Schick-positive reactors, they administered a total of diphtheria anatoxin varying from 1.1 to 1.5 cc. in three divided doses at weekly intervals (0.2, 0.5 and 0.8 cc.). From careful statistical observations as to the incidence of diphtheria as well as of acute tonsillitis and acute laryngopharyngitis on the ship, the authors found diphtheria to have been completely eliminated and acute tonsillitis and pharyngitis greatly reduced among these men during the twelve months following the prophylactic immunization. Schick tests then repeated on these men gave, without exception, negative reactions. From these results it is recommended that diphtheria anatoxin, in the amount of 1.5 cc. and administered in three divided doses at weekly intervals, be employed as an effective measure in the prophylaxis of diphtheria.

Pathology of Pellagra.—Nakamura and his associates give a detailed report on the necropsy in a case of pellagra occurring in a sailor with a history of chronic gastrointestinal disturbance. The patient had complained of vague epigastric pain, numbness of the lower extremities and slight edema, all suggestive of beriberi. The roentgenogram revealed a mild degree of gastroparesis, and the gastric acidity was extremely low. Except for a slight leukocytosis with a left shift, blood counts and serologic tests were essentially negative. Urinalysis showed the presence of albumin and urobilinogen. After a slight improvement the patient was allowed to go fishing at the hospital lagoon, and the sunlight to which he was thus exposed caused his skin to become erythematous with the development of a tingling sensation; later the skin became brownish with a bran-like desquamation. These cutaneous lesions failed to clear up and turned into well demarcated copper hued areas in the middle of the chest, on the nose, and over the knees and dorsum of both feet. Urinalysis at this time revealed the presence of indican in addition to urobilinogen. Administration of high dosage of vitamins B₁ and B₂ failed to produce improvement. Necropsy revealed marked atrophy of the heart, kidneys, liver and intestine, excessive dilatation of the stomach with evidence of atrophic gastritis, and numerous hemorrhages in the entire gastrointestinal tract. There was definite scar formation in the pachymeninges as well as in the leptomeninges of the frontal lobe, together with a considerable degree of round cell infiltration. Microscopically the myocardium was greatly atrophied and the liver also generally atrophic with fibrosis of Glisson's capsule and cellular infiltration. The muscle fibers near the pylorus of the stomach were slightly hypertrophic with round cell infiltration in the interstitial spaces, most pronounced near the nerve fibers. A few Russell's bodies were seen in the mucosa, which was highly atrophic. The intestinal mucosa was also atrophic and the follicles were increased in number, with evidence of extravasation of blood around the capillaries.

Tokyo Igakkwai Zasshi, Tokyo

55:189-274 (March) 1941. Partial Index

*Studies on the Function of Hypophysis in Carbohydrate Metabolism. T. Sakai.—p. 189.

Hypophysis in Carbohydrate Metabolism.—Sakai started his investigations on the function of the hypophysis in carbohydrate metabolism by first observing sugar assimilation in 14 cases of acromegaly, in 64.3 per cent of which he found glycosuria. In over half of these cases the glycosuria was found to be renal in nature, with a spontaneous and markedly fluctuat-

ing elevation of the excretory threshold. In all cases in which glycosuria was present the duration of the disease had been more than ten years. In only 3 cases was there fasting hyperglycemia, with a definite lowering of sugar tolerance. Sakai believes that hyperglycemia in acromegaly is extrainsular in origin. The second phase of his studies deals with the observations of sugar metabolism in patients with disturbance in the anterior pituitary lobe. Of 9 cases of dwarfism, 4 cases of cachexia, 3 cases of polyglandular deficiency, 2 cases of eunuchoidism and 3 cases of dystrophia adiposogenitalis the majority exhibited disturbances in sugar metabolism, such as delayed restoration of normal blood sugar level following alimentary hyperglycemia, slow development of epinephrine hyperglycemia, glycosuria and relevation of both sugar tolerance and the excretory threshold. In a further study of sugar metabolism in 6 cases of diabetes insipidus the author found practically no evidence of disturbed sugar metabolism. In 10 cases of hypophyseal dysfunction without association of endocrine disturbance, Sakai found 2 patients presenting symptoms of anterior lobe dysfunction during pregnancy with renal glycosuria, which he explained on the basis of the pregnancy-cell-nodule hypothesis of Erdheim. In the experimental animal (rabbit) the author saw an immediate elevation of the sugar excretion threshold by the intravenous or subcutaneous injection of gonadotropic extract from pregnancy urine. One or one and a half months after the subcutaneous injection the threshold was gradually lowered, and repeated administrations at this stage no longer produced relevation. Identical results were obtained with a similar injection of adrenal cortex extract. These observations prove that elevation of the renal threshold produces marked alimentary hyperglycemia and that the metabolic function is at its best when the renal threshold is low.

Acta Chirurgica Scandinavica, Stockholm

84:383-478 (March 29) 1941

Operation for Carcinoma of Rectum per Laparotomiam with Conservation of the Anal Portion. A. Troell.—p. 383.

Subcutaneous Total Rupture of Achilles Tendon and Its Treatment. N. Silfverskiöld.—p. 393.

Is Urography a Reliable and Valuable Differential Diagnostic Aid in Acute Appendicitis? H. B. Wulff.—p. 414.

*Serotherapy in Peritonitis. G. Bohmansson and E. B. Norup.—p. 427. Pathology and Clinical Aspects of Papillitis Necroticans Renalis. J. Mellgren and G. Redell.—p. 439.

Simplified Method of Extraoral Trunk Anesthesia of Second and Third Branch of Trigeminal and of Gasserian Ganglion. J. Quitner.—p. 458.

Benign Ureteral Tumors. T. Olovson.—p. 469.

Serotherapy in Peritonitis.—Bohmansson and Norup state that acute septic perforation peritonitis has been treated at their hospital in Örebro with serum since 1934. In 1935 one of them reported at a meeting in Copenhagen that until then serotherapy had not reduced the mortality of peritonitis. On the basis of subsequent observations, however, they arrived at a different conclusion. They found that as long as small doses were used, namely from 20 to 40 cc., the mortality did not decrease. During the ten year period from 1929 to 1938 the mortality was above 40 per cent. The authors restrict the term diffuse septic peritonitis to cases which show a much impaired general condition, diffuse abdominal tenderness, peripheral circulatory disturbances, severe impairment of the intestinal function and free purulent exudate in the abdomen either of putrid odor or yielding bacteria by culture, the culture being made immediately after opening of the abdomen, before the focus is touched or exploration has been done. Only cases which fulfilled all these requirements have been counted, and this explains the high mortality. During 1939 and 1940 the authors used much larger doses of serum. They now introduce at the time of operation 60 cc. into the abdomen and 40 cc. intravenously, and in exceptional cases supplementary doses are given on the following days. This serum therapy was combined with sulfanilamide medication, which is continued for from four to five days. In this way it was possible to reduce the mortality to 6.3 per cent. The material on which the present report is based comprises 3,787 cases of gangrenous appendicitis, of which 626 had perforated before the operation and 210 cases were

complicated with diffuse septic peritonitis. The authors conclude that with large doses of serum combined with sulfanilamide it will be possible to lower the mortality in diffuse peritonitis but that this treatment is of no particular value in circumscribed peritonitis. Anaphylactic shock is rare with these large doses not only when administered under general anesthesia in the course of operation but when given under spinal anesthesia as well.

Acta Medica Scandinavica, Stockholm

106:239-344 (Feb. 17) 1941

Nature of Certain Peculiar Corpuscles Present in Tissue of Lymphogranulomatosis Benigna. J. Schaumann.—p. 239.

Plasma Protein in the Epileptic During Inanition. R. Eeg-Olofsson.—p. 254.

Excretion of Fluorine in Urine in Chronic Fluorine Poisoning in Workers with Kryolith. G. C. Brun, H. Buchwald and K. Roholm.—p. 261.

*Experimental Studies on Production of Pernicious Anemia by Operation on Digestive Tract: Survey of Results of Total Gastrectomy and Resections of Stomach. S. Petri and H. Jensenius.—p. 274.

Population and Clinical Statistics of Pulmonary Infections. J. Rudebeck.—p. 293.

Acute, Nonfatal Cocaine Poisoning: Four Cases. N. Alwall.—p. 335.

Production of Pernicious Anemia.—Petri and Jensenius review results of other investigators and their own on the operative measures carried out on the stomach in an attempt to produce pernicious anemia. Various anemic conditions (depending on the species of animal and the type of operation) have developed but in none of the many experiments has pernicious anemia been produced successfully, with the simultaneous appearance of the typical characteristics: hyperchromic megalocytic anemia, hyperplasia of the bone marrow and capacity for reaction to liver therapy. Nor has this been accomplished after toxic or other injurious treatment of the animals operated on. In a few cases a blood picture resembling pernicious anemia has been observed. In gastrectomized pigs a severe chronic and finally fatal pellagra has appeared. The condition also appeared in other species submitted to such treatment. The frequency with which spontaneous anemias have appeared in the dog has varied somewhat: after total gastrectomy in 78 per cent, after subtotal gastrectomy or resection of the stomach in 59 per cent and after "isolation of the stomach" in only 27 per cent. In contrast to this, after resection of the fundus or pylorus, anemia developed in 100 per cent of the cases. The less frequent occurrence of anemia when the stomach was made to form a closed pocket suggests the hypothesis advanced by Morris and his collaborators (1933): that the stomach might have some endocrine substance with an antianemic function. In dogs, swine and rats, the more common types of anemia have been hypochromic anemia (most frequent) and "isolated hypochromia." In the monkey only hypochromic anemia has been diagnosed. There is some difference in the time it takes anemia to develop after various operations. Animals seem to become anemic more rapidly after total gastrectomy and resection of the fundus than after resection of two thirds of the stomach. Accordingly removal of the fundus area may possibly prove most decisive for the development of the anemia. In dogs remission has been observed especially after resection of the fundus and in swine only after resection of the pylorus. The authors discuss the views concerning the failure to produce pernicious anemia experimentally by operations on the stomach. The views have varied owing to the variable stand of the clinicians with regard to the antipernicious anemic activity exerted by various parts of the digestive tract and also reflecting in part the uncertainty which recently has asserted itself with regard to the site and mode of formation of the active liver principle. Before the studies are extended further the authors believe that the biologic foundation for a positive result must be cleared up. They conclude that since the operations used so far have not resulted in pernicious anemia—despite the fact that animals appear to possess the biologic foundation for such a condition—two possible causes suggest themselves: (1) either the site of formation of the intrinsic factor is not interfered with sufficiently by the operation or (2) the correctness of Castle's theory has to be questioned.

Book Notices

Essentials of Dermatology. By Norman Tobias, M.D., Senior Instructor in Dermatology, St. Louis University, St. Louis. Cloth. Price, \$4.75. Pp. 497, with 143 illustrations. Philadelphia, Montreal & London: J. B. Lippincott Company, 1941.

Tobias presents an excellent compact synopsis on dermatology in which, "as far as practical, each disease is discussed from the standpoint of internal medicine." The subject matter of the book is divided into thirty sections, e. g. the erythema group, the eczema group, drug eruptions, the toxic bullous diseases, diseases due to physical agents, diseases due to psychic and nervous disorders, tuberculosis of the skin, the deep infective dermatoses, syphilis and malignant growths of the skin, the metabolic disorders, pigmentations, the lymphoblastomas, the erythrodermias and a section on dermatologic therapeutics. All the subjects are discussed well in a succinct manner with a good literary style. Under metabolic dermatoses the avitaminoses are discussed. The accepted newer concepts in dermatology are incorporated in the discussions in the book. In the first section, on basic survey, under etiologic factors the author discusses atopy and nonatopic allergy together with drug, bacterial and physical allergy. Under diagnostic methods he mentions briefly those important pertinent procedures of interest to dermatologists and to the practitioner interested in diagnosis in dermatology. In this section there is also an excellent discourse on the cutaneous manifestations of systemic disease. There are one hundred and thirty-eight halftone illustrations of dermatoses, of good quality. The book is in convenient small form printed on good paper with a clear legible type and is an excellent addition to the compact textbooks dealing with the essentials of dermatology and should have a place in the library of students and general practitioners who desire to acquaint themselves with the basic facts of dermatology.

Sex Variants: A Study of Homosexual Patterns. By George W. Henry, M.D. With Sections Contributed by Specialists in Particular Fields. Volumes I and II. Sponsored by Committee for the Study of Sex Variants, Inc. Cloth. Price, \$12.50, per set. Pp. 546; 549-1179, with 66 illustrations. New York & London: Paul B. Hoeber, Inc., 1941.

In 1935 a committee was established to study sex variants. The membership included some of the most distinguished workers in this field, associated with experts in biology, psychiatry, genetics and similar subjects. Arrangements were made to secure interviews with a considerable number of persons known to be homosexual, and in these two volumes are reported a complete study of 80 persons of this type. For each there is a genetic chart, a record of general impressions, the family background, the personal history, the physical examination, including a special study of the sex characteristics, and a complete roentgenologic study, then a comment and a summary.

At the end of the second volume there appear a number of collected studies. The author is convinced that the sex variant is a by-product of our civilization—an expression of inability to meet the responsibility of establishing and maintaining a home which involves the rearing of children. Unfortunately, investigations made in primitive civilizations seem to indicate that in such instances as well the sex variant is not infrequent.

An interesting observation is the following: "All persons who manifest violent emotional reactions to the sex variant warrant serious consideration. Such persons may be reacting to personal experience or they may be on the defensive lest they disclose their own unconventional desires and impulses."

Another significant conclusion is the following: "There is no adequate substitute for well adjusted parents. The supervision of the psychosexual development and conduct of children is one of the greatest responsibilities of parenthood. Servants, siblings and other relatives as well as friends often contribute to the psychosexual distortion of children. In our present state of ignorance regarding sexual matters, a parent who is fully prepared to undertake the responsibility of supervising the psychosexual development of his children is a rare person."

There are altogether five and one-half pages of these impressions, which should be read with care by every one who may be concerned with this problem. It is indicated that the law has been a conspicuous failure in handling this serious situation.

Society has no solution for the problem. Scientific approach would seem to be the only answer.

Special supplements to the book include a series of masculinity-femininity tests of men and women, some full page illustrations of physical characteristics, scientific studies of roentgen anthropometry, a gynecologic study by Dr. Dickinson and a series of drawings, and finally a study of the language and vocabulary of sex variants.

The book is a most useful scientific contribution to the subject, obviously to be restricted in its distribution to those with a legitimate scientific interest.

A Manual of Maladies Influenced by Oxalic Acid Poisoning viz. Industrial Myositis Fibrosa, Occupational Schizophrenia and Experimental Wassermann and Kahn Tests. By Abel C. Anthony, B.S., M.D. Cloth. Price, \$2. Pp. 85, with 17 illustrations. Chicago: The Author, 1941.

The temptation is to label this badly printed booklet both as confused and as confusing. These things this book is, but deep within its shortcomings there may be some fundamental disclosures warranting more careful inquiry. The book holds and claims to prove that oxalic acid is one cause of myositis fibrosa, is in some instances a specific cause of schizophrenia and that the presence of oxalic acid in the body upsets the diagnostic serologic reaction to the point that faulty diagnoses of syphilis are made. The author's material chiefly is derived from workers of a public carrier company in Chicago, where oxalic acid was one constituent of a cleaning fluid for toilet fixtures, cuspidors and wash basins. The author's arguments are colored by unveiled antipathy for the employer and the medical activities of the staff of an unnamed hospital designated as "carrier elected hospital." He provides no quantitative evidence as to exposures either for his patients or for experimental animals. The diagnosis of industrial oxalic acid poisoning apparently rests on qualitative exposure plus the presence of quantities of oxalate in the urine, blood and certain tissues. Anthony does not overlook the fact that normal urine may contain in the daily output from 30 to 40 mg. of oxalic acid (oxalates?) and that this amount may be augmented by a diet that includes rhubarb, tomatoes, asparagus, spinach or sorrel. He however possibly overlooks or minimizes the fact that oxalate crystals may be demonstrated in some normal tissues at all times.

Despite the author's concepts of scientific possibilities from oxalic acid poisoning, his evidence distressingly defeats his objectives. For example, at one point it is set forth that the minimum lethal dose for human beings is 60 grains, but at one point the author in presenting a finding of 0.275 mg. of oxalic acid in a 140 mg. forearm biopsy specimen taken from a 140 pound woman has furnished basis for the calculation that if the oxalic acid was equally distributed over the body at that moment there must have been a total body content of 1,947 grains. By all the rules this patient should have been dead some years earlier, since apparently the last exposure to oxalic acid was more than two years earlier.

Diseases of the Digestive System: A Text-Book for Students and Practitioners. By Eugene Rosenthal, M.D., Lecturer in the Medical Faculty, Royal Peter Pázmány University, Budapest, Hungary. With a preface by R. J. V. Pulvertaft, M.D., F.R.C.P., Reader in Pathology, University of London, London. Cloth. Price, \$8.50. Pp. 394, with 234 illustrations. St. Louis: C. V. Mosby Company, 1940.

This is a rather unusual book. It is essentially an eclectic presentation of lectures on the digestive system and a mass experiment in mnemonics. It is difficult to evaluate the lavish use of color and geometric design of the author's diagrammatic attempts to fix signs, symptoms and their association for the reader. Undoubtedly this method of presentation was developed by years of teaching experience. Whether it will have the same value in a textbook as it had in the classroom can be decided only by the reader. The text is divided into five chapters covering diseases of the esophagus, diseases of the stomach and intestinal tract, diseases of the liver and biliary tract, diseases of the pancreas and diseases of the peritoneum. The material is not an epitomized version of a textbook on this subject. It apparently represents the author's rich clinical experience carefully organized and dogmatized for effective presentation. The author's style is simple and practical. Pathology, diagnosis and treatment are concisely but

effectively presented. The frequent use of colored diagrams, charts and roentgenograms is a distinct aid to the reader in fixing the factual data. This is a book that the physician can profitably purchase though he may possess other textbooks on the digestive system. It is a painstaking effort by a trained clinician and teacher.

Common Mistakes of Surgery in India and How to Avoid These: A Practical Handbook for the Young Surgeon, the General Practitioner, the Hospital Medical Officer and the Surgically Minded Student. By Lt. Col. A. N. Palli, O.B.E., F.R.C.S., M.R.C.O.G., Senior Surgeon, Chittaranjan Sevo Sadan Hospital, Calcutta. Cloth. Price, \$3. Pp. 352, with illustrations. Calcutta: Book Company, 1940.

The common mistakes of surgery in India and modern surgical practice are discussed in this book, written by a civil surgeon who has had long experience in Bihar and Orissa. It contains chapters on anesthesia in Indian practice, antiseptics, fractures and joint injuries, head injuries and cranial surgery, eye, ear, nose and throat, abdominal injuries and operations, rectal and genitourinary surgery, gynecology and modern treatment with sulfonamides and its abuses. The field of surgery appears to be covered extensively, giving the various methods of treatment and the author's views and knowledge gained through eminent surgeons who were his teachers. The book has been written for the general practitioner, the physician in charge of a small hospital, the young surgeon and the student interested in surgery. The style of the book, however, is poor and many words are misspelled.

Getting Ready to Be a Mother. By Carolyn Conont Van Blarcom. Revised by Hazel Corbin, General Director Maternity Center Association, New York. Fourth edition. Cloth. Price, \$2.50. Pp. 190, with 90 illustrations. New York: Macmillan Company, 1940.

The general practitioner, the obstetrician and the pediatrician often may find it advantageous to have a mother familiarize herself with the principles of conduct during and after pregnancy. This book may be recommended with confidence for this purpose. It should aid mothers materially in carrying out the physician's recommendations during pregnancy and in managing the infant during the important early weeks. As is true with many such books, certain ideas are advanced which may differ in point of view from those generally accepted, but these are presented only occasionally. For example, the suggested method of administering cod liver oil is not that which is generally approved. The makeup of the book is excellent and the illustrations are more than satisfactory; the book is clear, simple and interesting.

Hutchison's Food and the Principles of Dietetics. Revised by V. H. Mottram, M.A., Professor of Physiology at King's College of Household and Social Science, University of London, and George Graham, M.D., F.R.C.P., Physician to St. Bartholomew's Hospital, London. Ninth edition. Cloth. Price, \$6.75. Pp. 648, with 30 illustrations. Baltimore: William Wood & Company, 1940.

This book first appeared in 1900. The present edition indicates better than words its past value and usefulness to physicians and others interested in dietetics. The present editors realize that there is now little need for an encyclopedic book on dietetics which lists table after table of nutritive values of innumerable foods and that the emphasis now is on the "newer knowledge" of nutrition. From these two points of view, Mottram and Graham have extensively revised or in many instances completely rewritten the chapters, which have been rearranged into four sections: diet in normal life, the nature of foods, the principles of feeding in infancy and childhood, and diet in the treatment of disease. This revision brings this classic book on dietetics to be an authoritative expression of that which is both old and new. It should prove to be a useful book for daily reference by all interested in nutrition.

Les syndromes douloureux de la région épigastrique. Par René A. Gutmann, médecin des hôpitaux de Paris. Préface du Professeur A. P. Gosset. Tomes I et II. Third edition. Paper. Price, 495 francs. Pp. 750; 737, with 316 illustrations. Paris: G. Doin & Cie, 1940.

These two volumes compose an exhaustive treatise on maladies affecting the epigastric region. (The pancreas is included in a separate volume.) The work is richly illustrated with nine hundred and three roentgenograms and four hundred and thirteen diagrams. Emphasis is placed on the importance of detailed,

accurate history taking and thorough physical examination as aids to exact diagnosis. Contents include discussion of ulcers of the stomach and duodenum, cancer and gallbladder disorders. The perivisceral syndromes, dyspepsias (allergic, menstrual, nervous), hemorrhages, gastritis and duodenitis, avitaminosis, gastric crisis and malformations of the diaphragm and stomach also are discussed. Treatment is outlined in each section. This treatise should be useful to internists who read French. The sections on gastroscopy are limited. In general, however, there is a wealth of detail. The major criticism of the book is its length. The emphasis, from the diagnostic point of view, is far more detailed than the usual American work on gastroenterology. Some of the newer fields, as avitaminoses and gastrointestinal allergy, are treated at length.

Die Bakteriologie der Salmonella-Gruppe. (Typhus-Paratyphus-Enteritidis-Gruppe). Von F. Kauffmann, Abteilungsleiter am Staatlichen Serum-Institut Kopenhagen. Paper. Price, 29 Danish kroner. Pp. 393. Copenhagen: Einar Munksgaard, 1941.

The Salmonella or paratyphoid group of bacteria has been studied extensively by Bruce White in England and by Kauffmann in Copenhagen. By means of the agglutinin absorption test these strains have been studied and classified. The number of antigens in a given specific species may be many and thus the antigenic components of the group as a whole form a complex mosaic pattern. At the State Serum Institute in Copenhagen an international Salmonella center has been established and financed by the Commonwealth Fund. This center will supply gratis to national Salmonella centers in various countries all serums and cultures necessary for serologic diagnosis. Furthermore the international Salmonella center in Copenhagen is prepared to examine doubtful cultures without charge. Kauffmann has brought up to date in this report the more recent developments in this field. This book can be recommended to laboratory workers who are attempting to classify strains of Salmonella or to bacteriologists engaged in this field of research.

The Pharmacology of Anesthetic Drugs: A Syllabus for Students and Clinicians. By John Adrien, M.D., Instructor in Anesthesia, New York University College of Medicine, New York. Second edition. Fabrikoid. Price, \$3.50. Pp. 86, with illustrations. Springfield, Illinois & Baltimore: Charles C. Thomas, Publisher, 1941.

The pharmacology of anesthetic drugs is displayed in a unique fashion, making possible brevity with relative completeness. The author has based his statements either on experience or on statements that are considered not to be controversial that have been published elsewhere. The useful items of interest are included in the briefest possible form, such as a glossary, a bibliography and formulas of drugs, together with some laboratory results which fortify the statements as to clinical results. It is a book which those interested in anesthetic drugs will find valuable to have at hand for reference or for a quick review of the action of anesthetic drugs.

Counseling the Handicapped: A Manual on Aptitudes and Their Discovery and Interpretation. By Holland Hudson, Director, Rosetta Van Gelder, Rehabilitation Assistant, Rehabilitation Service. Paper. Pp. 55. New York: National Tuberculosis Association, 1940.

The National Tuberculosis Association recognizes the importance of occupational therapy, has studied the available tests of aptitude and presents them in a reasonably priced manual with full instructions as to how the various tests may be performed. A booklet of this kind has value for counselors in rehabilitation.

War Wounds and Injuries. Edited by E. Fletcher, M.A., M.B., M.R.C.P., Physician, Queen Mary's Hospital for the East End, London, and R. W. Riven, F.R.C.S., Surgeon to Out-Patients, French Hospital, London. With a foreword by Lord Horder. Based on articles in the "Post-Graduate Medical Journal" (Fellowship of Medicine). Cloth. Price, \$5. Pp. 262, with 57 illustrations. Baltimore: William Wood & Company, 1940.

This small volume contains articles dealing with practically all aspects of war wounds and injuries except burns and sepsis. Without entering into extensive theoretical discussions or attempting a presentation of controversial points of view the information offered represents the essence of experience gathered during the war of 1914-1918 as well as that more recently acquired in the present war. The contribution is preeminently practical and will undoubtedly prove of value to the younger surgeon called to military duty.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

YELLOW FEVER

To the Editor:—Please give me information about yellow fever, which I cannot obtain from the sources otherwise available to me. 1. In the absence of complete postmortem examination, is the diagnosis possible through examination of a "core" of the liver tissue obtained with a tracer? 2. How is diagnosis established in convalescent persons? 3. How is a vaccine obtained without identification of the causative organism? 4. How is the rhesus monkey utilized in the study of yellow fever?

Hermann B. Gessner, M.D., New Orleans.

ANSWER.—1. Yes, with small chance of error, if an adequate specimen, like that obtainable with the "viscerotome," is preserved in solution of formaldehyde U. S. P. diluted 1:10 and examined by a pathologist familiar with yellow fever.

2. For certain diagnosis in cases with recovery, 10 cc. of blood serum should be obtained in the first three or four days of illness and again three weeks after onset or later. The first specimen may be highly infectious and should not touch the skin of the operator. Each specimen should be tested in the laboratory in mice for protective yellow fever antibodies. If the first specimen gives a negative and the second a positive result, the illness is yellow fever. If only the convalescent serum is available a positive result shows merely that the person has had yellow fever at some time, but a negative one rules out yellow fever.

3. The causative agent is a filtrable virus which has been known and studied since 1927. The vaccine most widely used consists of a strain (17 D) of the living virus modified through long cultivation in chick embryo tissues.

4. The rhesus monkey is used in recovering yellow fever virus from man by injections of blood, in studying the effects of the virus in an animal reacting about as man does and in testing the vaccine for safety and effectiveness.

UNDULANT FEVER OR OTHER GASTRO-INTESTINAL DISEASE

To the Editor:—A woman aged 63 complained of headache, general aching, nausea and epigastric distress, together with a teasing cough and slight coryza. The temperature was 100.4 F. Since a mild epidemic of influenza was prevailing at the time a diagnosis of influenza was made, and under appropriate therapy the temperature dropped to normal and the respiratory symptoms cleared. However, the headache, epigastric distress and backache have persisted unchanged up to the present (six weeks) and a further history disclosed that she has had similar complaints over the past six months. There is an indefinite mass palpable in the epigastric region to the left of the midline, with moderate tenderness. There is a less marked tenderness at the right costal margin over the gallbladder region. The skin is dry and scaly, with a slight icteric tint to the sclerae. The rest of the physical examination is negative. There is a definite retention in the stomach, and she is unable to take more than a few mouthfuls of food at a time. Gastrointestinal roentgenograms were reported negative except for the retention. No evidence of malignancy was found. The gastric contents showed normal chemistry. Duodenal drainage has been carried out a number of times, magnesium sulfate, diluted hydrochloric acid and tincture of *Cardus marianus* being used as stimulants. No B bile has been obtained on any occasion. Flushings of the biliary system with various choleagogues gave no relief. Numerous preparations used to relieve the nausea had no apparent effect. The red count was 5,230,000, white count 8,200, hemoglobin 80 per cent. There is a slight dehydration present. A Hinton test was reported negative. A specimen of blood was reported negative for typhoid and paratyphoid and positive for undulant fever in a titer of 1:80. At the present time I am giving her injections of undulant fever vaccine at four day intervals. As she gets a fairly severe reaction locally, I have not increased the initial dose of 0.2 cc. In view of the failure to obtain B bile, I am continuing to carry out a duodenal drainage once a week. In addition she is getting sulfanilamide 5 grains every four hours. She has no fever at the present time and no night sweats. Her headache is unchanged and quite severe; she still has severe backaches, and the epigastric distress remains, with the anorexia. None of the usual analgesics relieve the headache. Any suggestions as to further laboratory work or therapeutic measures would be greatly appreciated. Economic conditions are such that I would not want to advocate expensive procedures unless they were clearly indicated.

M.D., New Hampshire.

ANSWER.—The information given is not sufficient to exclude numerous diseases; consequently, many additional laboratory procedures and continued observation may be necessary to arrive at a clinical diagnosis. The symptoms and observations described are compatible with brucellosis (undulant fever) but this diagnosis cannot be considered as definitely established.

Undulant fever, as the term implies, is characterized by fever of various types, degrees and duration with a tendency to relapse. This is one of the most constant clinical characteristics of the disease. The patient was apparently known to have had only one febrile episode and this of short duration. This would be a somewhat unusual course in undulant fever. It has been noted that patients with brucellosis are frequently unaware of a considerable degree of fever, and unless the temperature is taken daily at regular intervals both the patient and the family may not suspect that it is elevated. A temperature chart may be of great diagnostic value and if, under these circumstances, the patient's temperature has been and continues to be normal, the significance of the 1:80 agglutination titer is questionable. Such a titer may result from a past infection which is inactive at present. In the event of an active untreated infection the titer is ordinarily found to increase when the agglutination test is repeated at intervals of several weeks. Vaccine and sulfanilamide therapy may affect both the fever and the agglutination titer, and this should be taken into consideration in the interpretation of the findings. The white and differential blood counts may be helpful. The typical blood picture in undulant fever in the absence of secondary infection is that of a leukopenia with a relative lymphocytosis. The spleen is often enlarged but not always palpable. The intradermal test for undulant fever has definite limitations in the diagnosis of an active infection. The skin of practically all persons who have had brucellosis remains permanently allergic to the antigen used in the standard intradermal test. When this allergic response is absent, that is, when the test is negative, it is usually considered strong but not conclusive evidence that the patient has never had a *Brucella* infection. In the presence of an active brucellosis, the intradermal test is almost always positive and the opsonocytophagic test is negative, whereas when both the intradermal test and the opsonocytophagic test are positive the infection is considered inactive and may, in fact, have completely subsided years before. Investigators, however, do not all agree as to the reliability and interpretation of the opsonocytophagic index, which incidentally is the quantitative determination of the patient's neutrophilic leukocytes to phagocytize *Brucella* organisms. Furthermore this is not a simple determination, and some experience with the method is usually required. The diagnosis of an active *Brucella* infection may, indeed, be difficult and can usually be made with absolute certainty only when cultures from the blood, stool or urine yield *Brucella* organisms. In rare instances the organism has been found in the bile. Unfortunately negative cultures have little significance, since *Brucella* organisms are not always found in persons proved by their subsequent course to have had an active brucellosis at the time repeated cultures were made. Further details of these tests can be found in Huddelson, I. F.: *Brucellosis in Man and Animals*, New York, Oxford University Press, 1939.

In view of the fact that the patient may have had influenza six weeks ago and has since then been afebrile, certain non-infectious diseases may merit further consideration. No mention is made of a cholecystogram. Unless the jaundice is severe or the patient is unable to swallow the dye, this might be of value. The history and findings as given could be those of a malignant growth, particularly of the digestive tract, and more specifically of a cancer of the pancreas or the stomach. Carcinoma of the pancreas is frequently difficult to diagnose clinically even when the best laboratory facilities are available. It is sometimes suspected in patients with some degree of icterus which persists and becomes progressively worse, particularly when associated with a severe backache and a suggestive epigastric mass in the absence of a demonstrable intrinsic lesion of the stomach or the duodenum. This impression is not infrequently confirmed at operation or necropsy. The frequent association of cholelithiasis and carcinoma of the pancreas may confuse the clinical picture.

It has often been emphasized that gastric carcinoma may be asymptomatic until a late stage, even when numerous metastases have already occurred. It has also been observed that a small, hardly detectable carcinoma of the stomach may give rise to widespread metastases and that, in fact, the first complaints of a patient may be due to distant metastases. An early or small gastric carcinoma may barely arouse the suspicion of even the most expert roentgenologist, and not uncommonly it is necessary to repeat the roentgenologic examinations one or more times to arrive at a definite opinion.

Since carcinoma of the stomach is one of the most common cancers, it is always well to keep this possibility in mind, particularly in persons over 40 years of age who complain of digestive disturbances of only a few months' duration. The

initial symptoms are often vague and may not direct attention to the stomach primarily. Stools collected while the patient is on a meat-free diet and in the absence of bleeding from the upper respiratory tract usually, but not always, give a positive test for occult blood. When hemorrhoids are present, as is frequently the case in elderly people, it is preferable to test material from the center of a fresh stool. The persistent presence of occult blood in the stool is not diagnostic of any particular condition but demands an explanation. In elderly people it is always suggestive of a gastrointestinal cancer and, unless the bleeding can be satisfactorily explained, a thorough proctoscopic examination is indicated. It should be noted that the passage of a stomach or duodenal tube may in itself result in occult blood in the stool for some days. The presence of free acid in the gastric contents does not exclude the possibility of gastric carcinoma. In some series free acid has been found in almost 50 per cent of the cases of carcinoma of the stomach at the time of diagnosis.

In the event of a malignant obstruction of the biliary tract, jaundice usually becomes progressively more pronounced. In obstruction due to cholelithiasis, jaundice is more apt to fluctuate or subside. This is sometimes best followed by serum bilirubin determinations at intervals of a week or so, and when this method is not available the icterus index can be used.

When free acid is present in the stomach contents of a patient with gastric retention, and chlorides and fluid are lost by vomiting or aspiration, alkalosis may result. The carbon dioxide capacity of the blood is then increased and the serum chloride is decreased. Headache is a common symptom in alkalosis and usually does not improve unless specific therapy is instituted. When parenteral fluids and saline solution are given, the symptoms of alkalosis almost invariably subside and not infrequently the improvement is spectacular.

Cardiorenal vascular disease accompanied by nitrogen retention may also cause severe persistent headaches refractory to almost any form of therapy. However, the patient's blood pressure seems to exclude this possibility, and furthermore the urinalysis would probably have given some indication of this. The patient's blood urea nitrogen level is apt to be elevated in view of the dehydration, and under these circumstances it is often difficult if not impossible to estimate the renal function unless sufficient fluid is given to do a urea clearance test. The fluids would, of course, have to be given parenterally to this patient.

Unfortunately the procedures which may be necessary to arrive at a diagnosis are not all simple. Therapeutic measures must of necessity be supportive until the primary pathologic condition can be recognized. The question arises as to whether the nausea might not be aggravated by sulfanilamide. In view of the dehydration and inability to take sufficient fluids by mouth, parenteral fluids are strongly indicated.

DIAGNOSIS AND TREATMENT OF MÉNIÈRE'S SYNDROME

To the Editor:—A patient has what is considered Ménière's syndrome. Spinal manometry and ophthalmoscopy reveal nothing of significance. The attacks of vertigo, nausea and vomiting are disabling, especially since the subject tends to be somewhat neurotic. 1. Does impairment of hearing have to be present in order to consider it a true Ménière's syndrome? There is no impairment of hearing. 2. The recent onset precludes consideration of operative intervention at this time. Has any confirmation been obtained regarding the use of electrolytes, orally, for the control of the dizzy spells? Is the method worth trying? If so, what salts are used? Dosage and other pertinent material is requested. 3. Have statistics been published on spontaneous recovery in this affliction or an recovery after various methods of treatment? Isidore I. Weiss, M.D., Stockton, Calif.

ANSWER.—1. Ménière's syndrome is defined as attacks of vertigo of otitic origin associated with tinnitus and deafness. However, it is possible for the tinnitus and deafness to be absent, at least in the early stages.

2. The medical treatment of Ménière's syndrome is based on (a) removal of etiologic factors such as chronic middle ear suppuration, foci of infection or allergic factors; (b) symptomatic treatment based on the assumption that the periodic attacks of vertigo are due to an edema or increase in intralabyrinthine fluid pressure: restriction of the intake of sodium, especially in the form of sodium chloride, restriction of the fluid intake to 1,000 cc. a day and the administration of potassium chloride or ammonium chloride to stimulate the excretion of sodium in the urine and thus to reduce a tendency for fluid retention in the tissues, since the sodium ion seems to be an important factor in fluid retention. (Dosage: ammonium chloride 3 Gm. with each meal in capsules, 6 capsules, each containing $7\frac{1}{2}$ grains [0.5 Gm.], taken during the meal, three days on, two days off. Or potassium chloride, 2 teaspoons, 25 per cent solu-

tion, three times a day. All of these medical measures are worth trying. Not all of them give results in every case.

3. It is a frequently recorded fact that Ménière's disease tends to be self limited and after a variable length of time, months or years, the attacks may cease spontaneously. In some cases the hearing impairment becomes stationary and permanent; in others the hearing improves as the attacks cease. Because of this tendency to spontaneous recovery, operative intervention should be reserved for only the most stubborn and disabling cases of vertigo, and the results of treatment must be interpreted cautiously.

References:

- Furstenberg, A. C.; Lashmet, F. H., and Lathrop, Frank: Ménière's Symptom Complex, *Ann. Otol., Rhin. & Laryng.* 43:1035 (Dec.) 1934.
Wright, A. J.: Aural Vertigo, *J. Laryng. & Otol.* 53:97 (Feb.) 1938.
Labyrinthine Giddiness: Its Nature and Treatment, *Brit. M. J.* 1: 668 (March 26) 1938.
Crowe, S. J.: Ménière's Disease, *Medicine* 17:1 (Feb.) 1938.
Jones, M. F.: Manifestations of Allergy in the Ear, *Ann. Otol., Rhin. & Laryng.* 47:910 (Dec.) 1938.
Dohlman, G.: Ménière's Disease on Allergic Basis, *Acta oto-laryng.* 27, 1939.

A summary of the annual literature on Ménière's disease appears in the *Archives of Otolaryngology* each year. The recent work is covered in the issues for December 1939 and for March 1941.

COTTONSEED SENSITIVITY

To the Editor:—Would you please inform me whether a person found sensitive to cottonseed is to avoid contact with all cotton and finished products, such as bed sheets, pillow cases, dresses and underwear or do the different processes through which cotton passes from the crude to the finished forms destroy the allergic property of the cottonseed embryo?

Jacob Reicher, M.D., Brooklyn.

ANSWER.—The cottonseed allergen is not present in the pure cotton fiber. The latter is almost totally insoluble in aqueous mediums. If there are any instances of allergy to such cotton products as bed sheets, pillow cases and underwear they are extremely rare and, when suspected, are probably due not to the cotton itself but to dyes and other finishing products. Of course, when the cotton contains some of the seed particles, such as is found in cotton linters, then the material does have the cottonseed allergen. When raw cotton ages, the dust formed contains a new allergen which is ordinarily called the house dust allergen. People become sensitive to this dust, but this material antigenically has no relation to the cottonseed.

OFFENSIVE FLATUS

To the Editor:—A healthy white man aged 41 complains of gas which is expelled with an offensive odor. This is the only complaint. It has been present for about two years. Constipation is avoided by taking heavy liquid petrolatum daily. All habits are excellent. The patient does not smoke. He says he wants to live a long time and live comfortably physically. I am unable to relieve this condition. Physical examination reveals no abnormalities. The man eats a balanced diet. What is causing this condition? What diet do you suggest? What medication do you advise? This information is crude, but there is no other information to give. M.D., South Carolina.

ANSWER.—The passage of unusual amounts of foul smelling flatus suggests a dysfunction of the digestive tract which permits unusual amounts of poorly digested or assimilated foods to reach the colon. Intelligent treatment requires a more complete diagnosis. The examination of fecal specimens is required, and this is a procedure most frequently neglected. A highly acid stool containing undigested carbohydrates would indicate a fermentative process and the need for a diet low in carbohydrates. Putrefaction must also be excluded. In any event the use of liquid petrolatum should be stopped, organic causes of the constipation excluded and a normal intestinal function restored with a diet rich in cooked fruits and vegetables. In some persons the habitual use of liquid petrolatum alone may cause considerable disturbance of intestinal digestion and absorption, especially of vitamins, and give rise to a condition such as that described.

ointment BASE FOR SULFATHIAZOLE

To the Editor:—In the Journal, Jan. 25, 1941, page 536, a formula is given for sulfanilamide ointment. Could sulfathiazole be used instead of sulfanilamide in this formula? If not, is there a formula in which sulfathiazole can be used? Ellsworth Wilson, M.D., Highland, Ill.

ANSWER.—Sulfathiazole cannot be incorporated easily in the ointment base mentioned. Cod liver oil or hydrous wool fat base seem to be more satisfactory for incorporating sulfathiazole.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 117, No. 9

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CHICAGO, ILLINOIS

AUGUST 30, 1941

THE EDUCATION OF A DERMATOLOGIST

CHAIRMAN'S ADDRESS

J. G. HOPKINS, M.D.
NEW YORK

The increasing demand by recent graduates in medicine for advanced training in various specialties has made necessary the current effort to develop the facilities for such education. Our graduate departments are still in their formative stage. Methods and organization vary widely in different institutions. Changes will doubtless take place as these are tested by experience. It may be of interest, therefore, to consider at this time the procedure to be followed and the facilities necessary for the education of specialists in dermatology.

METHODS OF TRAINING

The object is to develop in students an understanding of disease and skill in its management rather than to furnish them with information. This makes the choice of method important. A man must build his understanding by observation and reasoning and develop skills by practice. Neither can be set up in his mind from prefabricated units. The belief that education should begin with individual phenomena and generalizations arrived at by correlating things observed is as old as Socrates. It has been called the inductive method to distinguish it from all which teach the student facts and theories by which he may explain his observations or rules by which he may work.

The essence of inductive education is in the system of teaching anatomy developed by Mall. The student was given a part and made to dissect. Only after he had found the fascia, the muscles, the nerves and the blood vessels was he to read about them. No lectures were given, only individual discussions with the demonstrator in the dissecting room. Osler made his students clinical clerks. They took histories, made examinations and drew their own conclusions before discussing cases with their instructors. Richard Cabot taught about cases, not about diseases.

Forty or fifty years ago these ideas revolutionized medical teaching. We still avow our belief in them, but adherence to the principle of inductive education presents practical difficulties. For one, there is such a terrific variety of problems which may suddenly confront a practitioner that it is impossible to have experience with them all during the student years. The

conscientious teacher fears what his pupil might do in some predicament that had never been explained to him.

Does the memorizing of symptoms, signs and treatment help? You have all been taught the antidotes for phosphorus, how to reduce a subcoracoid dislocation and how to manage a face presentation. How many remember? In an emergency, would you not have to depend on some general principles derived from cases which you had managed or help to manage? How often the instructor who has spent hours drilling a subject into the student's head is surprised to find on later examination only faint and distorted traces of it all. Yet this is the normal fate of information that is not rooted in experience.

As science and practice have progressed, the undergraduate curriculum has become more and more crowded. In the laboratory most so-called experiments follow explicit directions to a predicted conclusion. In the clinic demonstration is often substituted for practice. In all departments a variety of diseases, techniques and theories are discussed in rapid sequence, and the student is forced by ordeal of examination to load his memory with information that he can never retain.

I suspect that our present medical curriculum would benefit from a radical débridement. If we could eliminate all the things that students will forget within two years of graduation we would reduce the factual material by at least one half. Should we do so our graduates would write deplorable examinations but they might make better doctors.

However, that is all an intricate problem on which I would not seem to pass cursory judgment. I say all this because I believe that in organizing graduate training we have an opportunity to develop truly inductive education. We can start unhampered by fixed ideas of details that must be covered. To do so would be in accord with our best traditions, for with all our faults we dermatologists have long had the virtue of objectivity. Our favorite occupation at meetings is examining interesting cases, and our journals are filled largely with case reports.

However, if we are to use inductive methods, we must realize that we cannot teach as many men as many things in as short a time as we might by a didactic system. We must abandon the hope of covering our whole subject or of turning out a finished product. We can, however, train our students to observe and to reason, to evaluate their own experience and to comprehend the developments of science and use them in the solution of their problems. These matters are more important than their present proficiency. They have an expectancy of life of perhaps thirty-five years. In that time medicine will advance. Few of the technical methods, only some of the concepts or even terminology that we teach them today will survive.

From the Department of Dermatology of the Vanderbilt Clinic and the Columbia University College of Physicians and Surgeons.
Read before the Section on Dermatology and Syphilology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 4, 1941.

PROGRAM OF TRAINING

In order to derive ideas of disease from observation of cases, the student should spend the major part of his training period in the clinic and wards. He should examine and treat his own patients and follow them through the course of their illness. He should attend consultations about them in other departments. His work must, of course be controlled by an instructor, both for his own good and for the protection of the patient, but demonstration and discussion should come only after he has himself worked out a problem as best he can.

The student should serve successfully in each department of the clinic so as to gain experience with representative types of disease and different technics of treatment. His course should include a term of residence in a hospital, for there is no adequate substitute for the experience of living with patients and with colleagues working in related fields. The running time of this clinical experience requires careful planning, but the schedule should not be rigid. It should be adjusted to the interests and abilities of the individual student.

Laboratory diagnosis should be learned by examination of specimens from patients whose clinical course he can observe. Systematic laboratory courses seem necessary in histopathology and perhaps in mycology and other subjects. Such courses will, however, mean far more if used to systematize ideas derived from previous study of his own cases.

Physical therapy again is best learned by actually using the apparatus. Once a student has mastered the technics of the clinic where he works, a study of other systems will have meaning, and a discussion of physical principles and of the structure of apparatus will answer questions that have already arisen in his mind. The same applies to other therapeutic technics.

The basic sciences present a difficult problem. It is obviously desirable that the student should understand chemistry and physics, physiology, pathology and microbiology as related to dermatology; but, if we are to use inductive methods, we cannot cover all these subjects, or any one of them completely, within three years. In this quandary we may find a solution in the practice of other graduate departments. A candidate for the doctorate of philosophy chooses his major subject and elects one, or perhaps two, minor subjects which should aid his understanding of the first. Graduate training in many departments of medicine has been similarly organized. I would have each student of dermatology elect one science and spend at least six months (or half time for a year) in a laboratory, not taking courses but working. At first he may do well to assist some experienced investigator in a problem unrelated to dermatology in order to lay ground work and acquire technic, but sooner or later he should attack a dermatologic problem. As in the clinic, work must be supervised and guided, but it should be planned and executed by the student.

In this he may make no great contribution to science, but he will learn to outline an experiment that will answer a question, to use precise technic and to evaluate results. These matters are common to all sciences and should govern his work in the clinic. The student will also gain understanding of the processes which he studies, so that he can think of his clinical problems in terms of cell permeability or of lipid metabolism or of specific sensitization—whatever may be his particular

field. This ability and the intangible effect of informal and intimate association with men of the laboratory will influence all his future work.

I would emphasize the value of such training for the development of the science of dermatology. If there were coming into our group young men trained in pathology, others in some branch of chemistry or physiology and still others trained in microbiology, we would see progress. Each would have ideas and methods with which to attack the problems that confront him in the clinic. Each would be able to discuss questions and to teach students from some special and illuminating point of view.

If we undertake training of this type, no time will be left for short courses in other branches of science. Does that mean our student can learn nothing of the other sciences that are necessary for his clinical understanding? I submit that he should gain a truer comprehension of these sciences by thorough work in one than by short courses in all. If what he needs cannot be derived from observation in the laboratory, much can be learned in the clinic. We should be able to teach as he faces his patients by discussing the physical and chemical processes that are going on before his eyes. He could then derive his ideas of biology from observation of clinical phenomena and such ideas would have reality.

A program such as I have outlined may be embroidered with clinics, demonstrations, lectures and seminars if one remembers that they are just embroidery and that the basic fabric is clinical and laboratory work. The more active participation by the student such exercises demand and the more they stem from the work he is doing, the better. They may be useful in stimulating interest. They often point out topics that should be studied. They may be used to assemble and evaluate material that is scattered in the literature. The student should not, however, devote too much time to watching others work or listening to what they have to say. As Mall¹ remarked, "The very name 'student' tells what the person so named should be doing."

FACILITIES FOR TRAINING

Training of the type just discussed requires more extensive equipment and makes greater demands on the time, interest and ability of the staff than does a more formal type of instruction.

1. *An Outpatient Department.*—This should be arranged in sections so that patients requiring special forms of treatment, such as radiotherapy, chemotherapy or minor surgery, or special diagnostic procedures, such as allergic studies, and also those presenting some problem under investigation may be grouped together. As dermatologists now bear the main responsibility for the care of syphilis, a special section should be equipped for this purpose. The clinic should also have diagnostic laboratories for histopathology, mycology and bacteriology and possibly for other fields. It should be equipped for radiotherapy, actinotherapy, minor surgery and other forms of treatment of special importance to the dermatologist. The laboratories and treatment rooms should be grouped in the clinic so that the student may use them for his own cases and so correlate this work with his clinical observation. The clientele

1. Mall, Franklin P.: *The Anatomical Course and Laboratory of the Johns Hopkins University*, Bull. Johns Hopkins Hosp. 7: 85 (May-June) 1896.

of the clinic must be large enough to include examples of the rarer dermatoses.

2. *A Ward Service.*—This should be large enough and sufficiently endowed to provide the prolonged hospitalization required for severe chronic dermatoses. It should be designed, equipped and staffed especially for its purpose. The conventional hospital ward is ill adapted for the care of our patients, many of whom are ambulant and many of whom require isolation. Few nurses or orderlies know anything about their special care. Actinotherapy, balneotherapy, fever therapy and dust-free rooms are among the many special requirements.

3. *Research Laboratories.*—It is important for the education of both students and staff that research be conducted within the department. Rooms equipped for chemical, physiologic, pathologic and microbiologic work with easy access to clinic and wards should be provided.

4. *Teaching Space.*—Conference and demonstration rooms, a small department library, offices for the staff and desks in the laboratories or elsewhere for each student should be provided, and perhaps even a lecture room for rare occasions.

5. *Staff.*—The clinical staff should include men specially interested in different phases of dermatology. They should have time for teaching and research as well as for the care of their patients. Whether they are "full time" or "part time" is not the chief criterion of their effectiveness, but at least a group of junior men on adequate salaries devoting full time to the institution seems essential. A similar senior staff would be desirable.

The laboratory staff should include at least a pathologist, a chemist, a physiologist and a mycologist. To obtain such a staff means finding not only the men but salaries, technicians, equipment and supplies. Their selection would be determined by the main lines of investigation which were planned. They would be most effective if chosen to do correlated work on some general problem, for example avitaminosis.

6. *Fellowships and Residencies.*—These should be provided for the students. The problem of support becomes more difficult as a man becomes older, and few can carry on a long period of graduate study if compelled to pay their expenses.

The department should be a part of a medical school and hospital. Its clinic, its laboratory and its library should provide only those facilities of peculiar importance to dermatology.

THE OPPORTUNITY

Perhaps I have said too much about methods and equipment. In all education the essential thing is the teacher. We have among us those who, by their own force and ability, have done outstanding work with inadequate facilities and scant financial support. They deserve the greater credit for succeeding under these handicaps.

What I would emphasize is the desirability of providing our teachers with the means for proper graduate education. These are essential if they are to develop future teachers and practitioners who will bring to patients with disease of the skin the full benefits made available by the advance of science.

An organization such as I have tried to outline is not to be found in this country. Many schools, otherwise

lavishly equipped, make practically no provision for dermatology. Few have sufficient ward space and none have adequate laboratories. Yet the clinics of Breslau, Zurich and Strasbourg were, until recent upheavals, developed much along these lines, and Berlin, Vienna, Paris and other European centers had clinical facilities more extensive than those I have suggested. Why has so little been done here?

Fortunately many departments of internal medicine and of surgery and some of pediatrics are almost ideal in their organization and equipment. There are excellent institutes for neurology, psychiatry, ophthalmology and urology. The needs of dermatology and the opportunity it offers for advancing the science of medicine seem almost unrecognized by our organizers of medical education.

This is not the place to discuss the contributions of dermatology to medicine, but I would remind you that dermatology has led the way in recognition of the varied clinical response to infection with the tubercle bacillus, that sarcoidosis was familiar to the dermatologist before the internist was aware of its existence, and that the same may be said of lymphogranuloma venereum and coccidiomycosis. Studies on sensitization of the skin have contributed much to our knowledge of allergy. The modern treatment of syphilis and consequent control of that disease have been developed largely by dermatologists.

No field should offer greater attraction to those who wish to carry on investigation. There are many well classified dermatoses the etiology of which is quite unknown—almost as many as there are internal diseases. In few lesions can the mechanisms of disease be so directly studied as in those of the body surface which can be closely and continuously observed, tested as to their response to various stimuli and repeatedly sampled for chemical or microscopic study.

In an address before the Congress on Medical Education and Licensure, Alan Gregg² listed and discussed "special opportunities for development in medicine in the decade now before us," among them dermatology. May I quote from his remarks?

In many American medical schools the budgetary support for dermatology is farcical. . . . Is it in any sense wise . . . to deny a considerable number of beds and the contributions of histology, physiology, biochemistry, pathology, bacteriology, psychiatry and internal medicine to the dermatologists? The usual skimping of scientific resources and collaboration for the dermatologists presents the classic picture of deliberate neglect in that the chief losers are probably not the dermatologists but medicine as a whole. It is exactly from neglected fields that we may expect our most significant advances.

102 East Seventy-Eighth Street.

2. Gregg, Alan: Addenda to the Agenda for the Decade 1940 1950, J. A. M. A. 114: 1139 (March 30) 1940.

Why We Need Water.—Practically all the body materials except skin, cartilage, bone and fat will dissolve in water, and every kind of tissue contains much of it—from bone, which is about one-third water, to a fluid tissue like blood about four fifths of which consists of water. In every cell of the body the materials of which it is made are present in watery solution, while about 10 pounds of water are circulating constantly to all parts of the body to carry soluble nourishment to the cells and soluble waste products away from them.—Bogert, L. Jean, and Porter, Mame T.: *Dietetics Simplified*, New York, Macmillan Company, 1940.

PATIENTS' ATTITUDES AND BEHAVIOR IN WARD ROUND TEACHING

JOHN ROMANO, M.D.

BOSTON

Bedside teaching is an established procedure in medical education. Its value as a teaching method and the advantages and disadvantages to the instructor and student have been considered by others. The patients' reactions to this procedure, on the other hand, have received little attention. There have been numerous essays which have considered the patient-physician relationship and the need for interpretation of personality structure with expression of sympathy and tact at the bedside. However, these have not been based on direct study of patients' reactions and are, for the most part, points of view and appeals for sympathetic attitudes.

In order to obtain more objective data, an investigation was undertaken to study patients' reactions and behavior during ward round teaching. Specific attempts were made to discover whether the experience is traumatic, to gain further insight into patients' reactions to their illnesses and to learn how the procedure might be utilized as psychotherapy.

METHODS OF STUDY

Ward Rounds.—One hundred unselected patients in the medical service of the Peter Bent Brigham Hospital were studied before, during and after Saturday morning teaching rounds. These rounds consist of the presentation of 1 or 2 patients from each of the four medical wards to a group of from fifty to seventy persons comprised of members of the hospital staff, visiting physicians, students and nurses. The patient is placed in his bed in the center of the ward with the case records, laboratory sheets, charts, roentgenograms and other laboratory preparations on adjoining tables and screens. Usually a patient has had to wait from a few minutes to an hour before rounds reach his ward. As the group enters the ward and disperses itself around the bed, the presiding physician speaks to the patient and introduces himself if the patient does not already know him. After the significant data have been presented by the house officer, the patient may be interrogated and examined by the various staff members. Various details of the history, physical examination or laboratory data may be reviewed more specifically with suitable objective preparations. Following this, there is a discussion of the various diagnostic, therapeutic and prognostic aspects of the problem. Occasionally guest clinicians and investigators are present to discuss problems in which they have special interest. In most instances patients remain for the complete discussion period. The total period of presentation of one patient varies from thirty to ninety minutes.

This teaching procedure was chosen in preference to the daily, more informal ward rounds, since the former is more uniform in the preparation, observation and examination of patients, in the manner in which it is conducted and in the staff direction. It was assumed that if untoward results were to occur they would occur more frequently in the former procedure, as the formal, more public experience is associated with more anxiety.

Preparation of Patient.—All patients who were presented were seen by the senior house officer of the ward the preceding afternoon or evening. Each patient was told that he was to be presented before a large group of physicians, that he was chosen because his problem presented certain difficulties which would be better understood and treated after general discussion, that he would be examined or interrogated concerning his illness and that the conference would last approximately one-half hour.

Before presentation, each patient was studied for an evaluation of his personality structure and the emotional significance of the illness to him. In addition, pulse, respiration and blood pressure were determined.

Examination During Presentation.—During the presentation the patient was observed for changes in facial expression, blushing, pallor, sweating, restlessness, crying and laughter. Care was taken to observe the patient's reaction to the approach of the group to the bedside, the recounting of the history, the examination, the questioning and the discussion or absence of discussion. The influence of any ambiguous or untactful remark concerning the patient, his illness or experimental data allied to the latter was noted particularly. Pulse, respiration and blood pressure were determined at the conclusion of the presentation.

Examination After Presentation.—The patient was interviewed from one to three hours after the presentation. Objective evidences of anxiety were noted. When possible, a spontaneous discussion of the patient's reactions to the teaching procedure was obtained. This was supplemented by questions related to various phases of the procedure. Many patients were asked to define certain medical terms and abbreviations used at the bedside. Interviews were also held with ward nurses, fellow patients and relatives in order to supplement and objectify the patient's responses.

With the exception of 4 girls aged 9 to 12 years and 1 boy aged 13, the patients were adult. The disorders were those observed in a general hospital medical service and thus included infectious, deficiency, metabolic, neoplastic, degenerative and psychogenic processes in varying degrees of severity.

By means of the psychiatric examination preceding the presentation, the patients were classified as having (a) little anxiety associated with their physical disease (29 men, 30 women), (b) considerable anxiety associated with their physical disease (9 men, 16 women), (c) predominantly neurotic symptoms with no demonstrable disease (2 women) and (d) confusion or fluctuation of the level of awareness due to various toxic or allied factors with varying degrees of anxiety (11 men, 3 women).

RESULTS

No severe emotional trauma was observed. In instances in which patients were tense or anxious, the reactions were mild and in no way resembled panic reactions. On the contrary, the attitudes and behavior of these patients revealed considerable insight into the positive value of ward round teaching. In the following, the attitudes and behavior of patients will be discussed as they were observed during the various phases of the teaching exercise.

Behavior and Attitude Before Presentation.—Only 4 patients disapproved of the preliminary explanation. By each of these the explanation was not completely understood. A 27 year old housewife of limited intel-

lectual endowment, experiencing considerable anxiety with erythema nodosum, complained that she had not understood the explanation and that she had been perplexed by the ward rounds. A second patient, an elderly Italian housewife who understood little English, worried over what the doctor had told her before the exercise. The remaining 2 patients were confused before and during the presentation. In these 2, the fluctuation of the level of awareness was apparent. Significant, from a positive point of view, was the grateful appreciation of most of the patients for this preliminary explanation. Not unusual was the expression of a woman aged 64 with facial erysipelas: "Seems to me you doctors could make us feel better if you spoke our language and told us some of the things that are happening to us."

In this phase before presentation, the significant untoward reactions were those of varying degrees of anticipatory anxiety. Twenty-four patients expressed themselves as feeling uneasy, tense, restless, anxious for it to be over or wondering what was to take place. Of these 24 patients, 12 had been considered to be experiencing considerable anxiety in their illness, 7 were confused and 2 were neurotic personalities without physical disease.

Behavior and Attitude During Presentation.—The anticipatory anxiety reached its peak immediately before and during the entrance of the group to the ward. Those patients who experienced anxiety most intensely were those previously noted. They comprised less than one fourth of the total number. In 16 there were objective evidences of tension characterized by blushing, motor restlessness, tossing of the head on the pillow, sighing respirations and picking at the bed linen. In addition to the remarks describing restlessness and uneasiness, the patients complained of "funny feelings in the stomach," "abdominal rumbling," "as if I had to pass water," "my heart beat fast and turned over." Only the 2 neurotic women showed significant changes in pulse and blood pressure. The anxiety of these patients was greatest as the group approached the bedside, decreasing after that. The following remarks illustrate the "let-down." A shy, sensitive youth-aged 17 convalescing from pneumonia stated: "I was pretty nervous before they came in, wondering what was to happen, but after they came in and the doctors began to tell them about my case, I felt much better." A young housewife with respiratory alkalosis and tetany associated with her anxiety stated: "My heart kind of went funny, my hands perspired and that funny feeling in my face and hands was coming on before they came in. After they came in it wasn't as bad as I thought it was going to be."

Thirteen patients were distressed by the recitation of the history. The following factors were of most importance: When historical data were presented which were unfamiliar to the patient, they caused considerable surprise and concern. This was illustrated by a young man who had experienced amblyopia and convulsions in the course of hypertensive encephalopathy. It was during the recitation of the history that he became aware for the first time that he had had seizures. This surprised and alarmed him, and he asked why he had not been told before and what was the significance of the seizures.

The recitation of data related to past or present personality difficulties led to resentment, anger and

humiliation. A young Greek-American housewife with endemic malaria enjoyed the presentation and discussion. However, she resented and was humiliated by the inclusion in the history of an attempt at suicide nine years before. "I felt as if my soul was exposed, and the fact that I did try to commit suicide I wish he hadn't said before all those people."

Social data, especially if they concerned prestige or security factors, provoked resentment. An elderly woman with tuberculous peritonitis became upset when it was stated that she was a fortune teller. She had had two trichobezoars removed from her stomach in the past, and she was relieved when the term "trichobezoar" was used in preference to "hair ball." On inquiry it was found that the patient did not mind being known as a fortune teller, but she feared that the relief authorities would curtail her allowance if they believed that she had other sources of income.

In the following, the use of a descriptive phrase acted as a trigger which allowed the patient to express considerable resentment which had previously been concealed. An educated, formerly successful business man who was addicted to alcohol and had multiple nutritional deficiencies was most disturbed when it was mentioned that the pain in his feet was thought to be due to poorly fitting secondhand shoes. "The only thing that bothered me at all was the mention of the secondhand shoes. That sort of wounded my dignity. Why couldn't they have said on old pair of shoes?"

From a positive point of view, most of the patients received considerable satisfaction from hearing the history. Many stated that they had heard it often enough so that they were on the alert for changes, and occasionally they would take pride in correcting the house officer concerning this or that point. Many expressed frankly that it was comforting to know that the doctors had taken such pains to learn all about them.

Seven patients were annoyed by physical examinations during the procedure. Two factors seemed to be of considerable significance. One was the sensitivity and embarrassment of patients to being disrobed and examined before a group. A sensitive obese girl thought every one was looking at her fat legs. A slightly confused myxedematous woman stated that too many had felt of her hair and skin. The second factor resulted from confusion following examinations which drew attention away from the principal complaint to a new anatomic site. This new and usually misunderstood emphasis caused considerable distress. A boy aged 13 with diabetes and nephrosis asked: "I wondered why they examined my heart so long; I haven't got heart disease, too, have I?" When attention was directed to a hitherto unnoticed adenomatous thyroid nodule in an elderly Negro suffering from an abdominal complaint, it perplexed him and led him to say: "My trouble is in my stomach. I can't see why they kept on feeling my neck and talking about operations."

Three patients were disturbed by the presence of charts, diagrams and roentgenograms. In each instance, this occurred in anxious patients who had been perplexed as to what the data signified.

The patients were untroubled by the infrequent group laughter which took place during ward rounds. Many patients laughed with the group and felt more at ease after it. A prim housewife laughed with the group when her spleen, once enlarged, was no longer palpable. Later, she appeared pleased with her description: "It's

not a palpable but an elusive spleen." No ideas of reference or undue sensitivity arising from the laughter were noted.

Behavior and Attitude During Discussion.—Of the 69 patients who remained for discussion, 11 would have preferred to have been removed from the ward. The reasons given for preferring to leave were those related to physical discomfort (pain, fatigue, hunger), those related to anxiety and those related to indifference concerning the medical discussion.

Thirty-one patients were removed before discussion. Fifteen were removed for reasons of physical disease, 12 because of anxiety and 4 for experimental purposes of comparison. Sixteen of the 31 patients would have preferred to remain for the complete discussion. This preference was based on the beliefs that they did not want to miss anything concerning themselves and that they gained reassurance from the group discussion. This preference was particularly true if patients had been presented previously or if they had seen other presentations. In these instances considerable anxiety was expressed when the patients were removed. As one patient stated: "This happened once before and I stayed through it. This made me wonder why I couldn't stay and whether my condition was getting worse."

Over half the patients stated that they understood the essential substance of the discussion. However, a much smaller number gave objective evidences of such understanding. The fact remains that discussions dealing with the care of diabetes, heart disease, hypertension, arthritis, and peptic ulcer were of such a nature that they served to educate the patient in the care of his disease.

All patients were pleased by the personal interest of the staff. The presence of the nurse at the bedside, a reassuring word and the calling of the patient by name did considerable to allay tension and anxiety. One elderly scorbutic patient, impressed with the friendly interest of the presiding physician, said: "It made me feel important, too—almost as important as these damn red splotches on my skin."

Divergent opinions of the discussants played no significant role in distressing the patients. Actually, the interchange of staff opinion was a source of reassurance to most patients, as they believed their problems were studied more thoroughly.

Sixteen patients believed that the discussion lasted too long; five were of the opinion that it was too short. Some of the expressions supporting the latter opinion demonstrated the prestige value and the intensity of emotional concern associated with the illness.

An elderly patient with postural hypotension asked if it were true that he had a rare and interesting disease. When told his condition was relatively uncommon and that a number of the staff were interested in the condition, he asked somewhat indignantly "Then, for heaven's sake, why didn't they talk about it longer than ten minutes? Why, twenty years ago I was operated on for hemorrhoids at the — — — hospital and they talked about my case for half an hour!" A frequently hospitalized elderly woman with angina announced to her bed neighbors that this was the morning she was to be the "duchess of the ward."

A middle-aged man, considerably concerned about a severe headache which had remained undiagnosed,

believed the discussion was altogether too short, since no one seemed to be able to throw any light on his problem.

Vocabulary.—Fifty patients were asked to define sixty medical terms and abbreviations used frequently in bedside conferences. These terms included "acid-fast," "CA.," "lues," "neoplasm," "mitosis," "Koch's bacillus," "P. A.," "G. C.," "ALC.," "EKG," "Wassermann," "growth," "tumor," "shock," "stroke," "neurotic," "nervous breakdown" and "prognosis."

No patient understood the terms "mitosis," "neoplasm," "metaplasia," or "metastasis"; 2 knew what "CA." meant; 3 understood "malignancy" and "carcinoma"; the majority interpreted "tumor," "growth" and "new growth" as "cancer," or as something growing somewhere, usually in the stomach. "Koch's bacillus" was totally unfamiliar. "Acid-fast" meant "contagious" or "concerning a germ" to one patient. "TB" was known by the majority of the patients. "Serology," "specific infection," "P. I. D.," "Hinton," "complement fixation," "Neisserian" and "spirochetal" were unfamiliar. Only 2 patients understood "lues" correctly; 8 understood "G. C." and 10 understood "Wassermann." Ten patients knew "leukemia"; 5 interpreted "lymphoma" and "Hodgkins" as "gland swellings"; 4 were familiar with "P. A." The terms "hypertension," "coronary" and "angina" were interpreted as dealing with the heart by 11 patients. "Shock," "stroke" and "paralysis" were used interchangeably. "Neurotic" was usually interpreted as "being off," "nuts" or "due to imagination," while "nervous breakdown" was attributed to overwork. "Degenerative" was usually interpreted in the moral sense of an antisocial, perverse personality, rather than a destructive tissue change. "Prognosis" was vaguely familiar to many, defined correctly by 1 and defined as "no hope" by 2 patients, who cited the moving picture "Dark Victory" as their source of information.

Usually patients were more familiar with terms associated with their own illnesses. Patients associated with hospitals in one capacity or another and those hospitalized for long periods of time were able to define more terms correctly.

COMMENT

This investigation indicated that the preliminary examinations were valuable in interpreting the experiences of the patients. Their greatest value lay in estimating the threshold for anxiety. With the stimulus (presentation) more or less constant, the degree of anxiety experienced was a further means of revealing personality structure and the emotional significance of the illness to the patient. The patient's participation in the teaching procedure and the opportunity for him to talk about it led to direct and indirect disclosures of personal concepts of health, of disease and of the emotional significance of disability. These data varied from ignorance and misinterpretation, which had provoked considerable anxiety, to manifest utilization of illness, either consciously or unconsciously, as a socially acceptable outlet for anxiety.

It was indicated that brief explanatory interviews to patients were of considerable aid in avoiding perplexity and correcting misinterpretation. Not only were the patients appreciative of the preliminary interviews, but most of them requested that the essential conclusions of the conference, particularly as they related to their

illness, recovery and return to work, be communicated to them in simple, understandable terms. This can be done best by the house officer who is most familiar to the patient, who has previously explained the procedure to the patient and who has presented the case history. The form and content of this final explanation will vary with the problem, the patient and the nature of the patient-physician relationship. In most instances it is possible to explain the essential program of therapy and the probable period of disability. Opportunity also exists in the latter explanation for the house officer to correct any misinterpretations which the patient may have concerning his illness, medical terms or staff opinions.

This study indicated further that some degree of anticipatory anxiety is inevitable in the presentation of patients. This type of anxiety is not unusual and is probably related to the anxiety experienced by speakers, actors and students before performance or examination. The intensity of the reaction is dependent not alone on the nature of the stimulus but also on concealed or unconscious anxiety associated with the illness. The anxiety may be lessened by means of a preliminary explanation and by tactful and sympathetic presentation. Care should be taken to avoid public presentation of detailed personal and social data in the patient's presence. In many instances these data are not sufficiently relevant to the immediate medical problem and may offend or embarrass the patient. Unfortunately, among lay persons and frequently among physicians, medical students and nurses, emotional factors are equated with moral values. An anxious patient is apt to be considered morally weak as often as he is accepted as a sick person. This was demonstrated in the patients' discrimination in defining "neurotic" and "nervous breakdown." The former connoted intellectual and moral decay, while the latter was interpreted invariably as a socially acceptable state of exhaustion due to overwork. When there are pertinent psychogenic factors, the presentation and discussion may be conducted in the patient's absence. In these instances, the patient may appear briefly for purposes of demonstration or interview. It has been learned that tactful discussion of the interrelationships between psychologic and somatic factors in the presence of certain patients has been of value in initiating emotional as well as intellectual insight. However, the danger of focusing further attention on somatic and visceral symptoms in neurotic personalities is an ever present one.

Unnecessary exposure should be avoided. When there is need for extensive display of the body, loin cloths or trunks should be used.

It was indicated that while the entire procedure of the ward rounds may and should be utilized as psychotherapy, the discussion period has the greatest potential value. In the discussion of certain disorders, the content was understandable to the patient and thus was of aid in enlisting his interest in the care of his disease. This was particularly true of patients who had diabetes, peptic ulcer and arthritis. However, a greater number of patients were more impressed with how the discussants spoke and behaved than with what they said. A sympathetic, confident and reassuring attitude at the bedside helped to allay the patient's anxiety and served to maintain a more adequate patient-physician relationship. While this is dependent on the behavior of the

entire group, it is the responsibility of the presiding physician to establish the rapport.

The bedside manner is the resultant of the patient-physician relationship. Essentially, this is an interpersonal relationship of emotional rather than of intellectual origin. In this relationship the patient identifies the physician with previous sources of emotional security. This identification serves to facilitate the expression of anxiety. Awareness by the physician of his role as a substitute source of security will help him to understand objectively his emotional significance to the patient. With this awareness there will come understanding of the not infrequent extremes of overvaluation or hostility which characterize patient-physician relationships.

SUMMARY AND CONCLUSIONS

The attitude and behavior of 100 patients were studied before, during and after weekly bedside ward rounds. Methods of study included evaluation of personality, observation during presentation and spontaneous discussion and interview following presentation. Pulse, respiration and blood pressure determinations were compared before and immediately after presentation. The patients were classified according to the degree of anxiety associated with their illness and according to the presence or absence of confusion.

No severe emotional trauma was observed. In instances in which the patients were tense or anxious, the reactions were mild and in no way resembled panic reactions. Most patients preferred to be told that they were to be presented. Anticipatory anxiety was experienced by roughly one fourth of the patients. Only 2 patients presented significant fluctuations in pulse or blood pressure. Thirteen patients were distressed by one or more factors during the recitation of the history; 10 patients were distressed by the examination and by the display of charts. Most medical terms and abbreviations were misunderstood or unfamiliar to the patients.

Most patients preferred to remain for discussion, particularly if they had been presented before or if they had seen others presented. Physical discomfort, anxiety or indifference constituted indications for removing patients before discussion.

This investigation indicated that detailed personal and social data should not be mentioned in the presence of the patient; that the discussion period should be used to educate the patient in the care of his disease and that it should serve to foster rapport and confidence in the patient, and that the essential conclusions of the conference, particularly as they are related to the patient's illness, recovery and return to work, should be communicated to him in simple and understandable terms.

It indicated further that brief explanatory interviews before and after each teaching exercise have two purposes: One is to avoid surprise and to correct misinterpretation. The other is to aid in acquainting the house officer with the personality structure of the patient and the degree of anxiety associated with the illness and in establishing a more adequate patient-physician relationship.

Ward round teaching, when conducted tactfully and sympathetically, with attention to the aforestated considerations, is not a traumatic emotional experience to patients but educates and reassures them.

MEDICAL ILLUSTRATION

MAX BRÖDEL

BALTIMORE

This article is a brief attempt to describe the subject of medical illustrating as I see it, state the necessary qualifications of an applicant who wishes to devote his life to this work and tell of the opportunities for success in this field after he has systematically studied the subject and has mastered it in its essentials.

It is agreed that a medical picture, correctly planned and accurately and artistically executed, is an integral part of the medical literature. It not only elucidates the text when needed but may in part even replace it. On the other hand, if not correctly planned or inaccurately drawn, or both, as often is the case, the picture is worse than useless and should be omitted. It is the business of the author of the book or article to eliminate a worthless picture. But it is also the duty of the illustrator to know when a picture is bad. He should realize his responsibility toward the medical profession and never attempt a picture until he is certain that his knowledge and skill are equal to his task.

Every picture should be the work of the artist who signs it. This is not always so. Medical illustrators have learned how to plagiarize; some do it cleverly, others clumsily. It is so easy to lean on others, to borrow or copy another man's picture or a part of it instead of choosing the honest road of original study from nature. Unfortunately the medical literature still contains such plagiarized pictures. It may be stated that economic factors, demanding speed, sometimes force the artist to copy rather freely without giving credit. He is content with a little alteration here and there and calls it a new picture, his own. But he does not realize that old pictures are apt to contain errors, sometimes glaring ones. A plagiarist who is too indolent to seek the truth through original investigation and copies old illustrations with ancient errors perpetuates them. For this reason alone there should be no plagiarism in medical pictures.

Medicine has made enormous strides within recent years. The changes have been both rapid and startling. It is the business of the illustrator to understand them and adapt himself to the new order of things. One of the changes affecting the artist is that photography has entered the field in competition with him. It has come to stay. It threatens to replace the hand made picture, which of course it will never do. True, photography has many advantages over drawing. It is quicker, cheaper and often also more realistic. But a photograph is not a medical illustration in the strict sense of the word. It is a valuable record of something which is easily seen and understood, which is to say the obvious. It fits admirably into a medical or surgical history; it shows clinical phenomena, external lesions, gross as well as microscopic specimens under low, medium and high magnification. Even operations have been shown both in still and in moving pictures. It is stated that a photograph is irrefutable proof of a form or fact under dispute, which of course is not true.

I believe that the illustrator will learn to regard the photographer not as a rival to be feared but as a helpful friend, especially in microscopic drawing, the bane of the medical artist. No longer does his pen have to draw thousands of nuclei, cradled in their elusive cyto-

plasm; no longer does he have to count their number, copy their form and size and also group and space them accurately. To do this all day, every day for months, was a trying ordeal. Fifty years ago there was no mechanical aid, no camera lucida, no photography. All such drawings had to be made by the artist free hand. I have labored over hundreds of them in color, in tone or in pen and ink. But it has done me no harm. Today these sections are all photographed, excepting an occasional section under high power, at which photography has failed in precision.

Photography is now used in every branch of medicine; it is employed with great skill, often to the entire satisfaction of the author and the investigator. It shows form, structure, color and texture, all with complete realism.

But it does not analyze, interpret or teach. It gives no answer to the host of inquiries which plague the student. It makes a dramatic picture, not a scientific one. It rarely shows more than what the photographer has understood, which is rather meager information. There are countless structures in the human body, both small and large, and yet so elusive in form and placement that they escape visual registration almost completely. Their significance is unquestioned and their behavior in health and disease a matter of great importance to medical science. They are there, and yet the eye cannot make them out without close study and observation. The camera in this circumstance is helpless, but the hand-made picture can bring them out with complete fidelity and make them comprehensible to the reader, student, novice and even layman.

Nearly every photograph in the medical literature can be made more valuable by the addition of an explanatory sketch or diagram, a synthetic picture, so to speak, created in the mind of the artist.

A medical picture may even be entirely synthetic and yet be drawn with convincing realism. To make such a picture the artist must know his subject so thoroughly that he can shut his eyes and coax into existence a mental picture of great clarity, complete in every respect. He also must be fully equipped to put this imaginary picture on paper, swiftly, accurately and, if necessary, with convincing realism. This is medical illustrating at its best.

The technic is a matter of choice—halftone, water color, oil, lead pencil, simple or elaborate pen and ink, or a combination of these. It should be remembered, however, that technic, artistic feeling, accurate draftsmanship, neatness and speed are all relatively unimportant. The planning of the picture and the registration of the scientific facts are what gives it its value, not the execution.

As a rule a simple outline drawing is harder to make than an elaborate plastic picture. It is perhaps the most eloquent and useful type of medical illustration. Much information, explanation and analysis can be crowded into a diagram. It may be stripped entirely of all form and structure, relying for its message solely on well chosen key words, figures and numbers, connected by lines and rendered more expressive by the addition of symbols, such as loops, rings, arrows and the like. Even the time element can be graphically shown, also cause and effect, sequence of stages in a disease or an operation. Most instructive pictures can be made that way.

For more than fifty years it has been my privilege to make medical illustrations in all the branches of the field.

Since March 1911 I have also taught medical illustrating at Johns Hopkins University School of Medicine. The experience gained during this long period may be of interest to those wishing to become medical illustrators. I shall try to show that the making of a medical picture is an intricate process, requiring much specialized knowledge and skill. It takes years of preparation to become an artist good enough to serve the medical profession.

A number of institutions now offer courses in medical art, some of them, as far as I can make out, rather sketchy. One instructor even claims to teach the subject in two evenings a week for four months. It should be obvious to any one that such teaching is entirely inadequate. The medical literature must be protected against poor pictures and the pupils from false promises.

HOW I BECAME A MEDICAL ILLUSTRATOR

The art department at Johns Hopkins medical school was the first of its kind in existence. I did not plan it. It came into being through a series of fortunate circumstances which I shall briefly describe.

1. Fifty years ago most medical pictures in textbooks and journals were done by untrained, self-taught artists who knew very little about medicine and less about art. There were no others available, and as a consequence the pictures in the medical literature were of poor quality, far beneath the illustrations in nonmedical publications such as magazines and story books. The draftsmanship of medical pictures was amateurish, the object ineffectively posed and illuminated, sometimes inaccurate in regard to its anatomy and topography. The object evidently was not properly understood by the artist, and the author was unable to help. He probably knew that something was wrong with the picture, but his attempt to suggest corrections usually made it worse. It must be admitted that the atlases were notable exceptions. They were costly tomes, mostly from an earlier period, magnificently illustrated with elaborate copper and steel engravings, later on by lithography, often in gorgeous colors. Much of their beauty was due to the exquisite technic of the engraver or lithographer, not to the artist who made the originals. The same was true of the really fine wood engravings of the early textbooks.

The photomechanical method of reproduction ended this period, and the cheap reproduction of poorly made drawings began.

This was the state of medical illustrating when I entered the service of Dr. Howard A. Kelly on Jan. 18, 1894.

2. I had been fortunate in having received my art training in an academy where meticulous draftsmanship was insisted on and where the graphic arts were included in the curriculum. Both were of great help to me in medical art.

It was also lucky for me to be poor, for I had to seek work during the summer vacations and other free hours throughout the year. I came under the eye of Prof. Carl Ludwig, the great physiologist, and was permitted to illustrate his research and that of his famous pupils. In the course of this work I met Dr. F. P. Mall and Dr. William H. Welch.

3. Luck pursued me. Through Dr. Mall I came to know and work for Dr. H. A. Kelly, whose brilliant work in gynecology marked the beginning of a new era in that field. He chose me to make the pictures for his first large publication, "Operative Gynecology." That was in 1894. I worked hard but with little suc-

cess. Photography was called in to aid in holding the elusive steps in an operation, to produce a clinical picture or show a pathologic specimen. I was urged to accept the help of the camera and obediently did so for a while but soon abandoned its aid, realizing that mere copying of a medical object is really not medical illustrating at all, which, as every medical man knows, goes much deeper than that. Moreover, an artist feels degraded when he copies or uses a photograph as a basis for his drawing.

4. It was fortunate for me that Dr. Kelly was not only a kind and patient chief but also an excellent teacher. He could see that my ignorance in medical matters was a handicap to me. I felt sure that I could draw what I understood but found it exceedingly hard to plan a picture so that any one, even a layman, could understand it. It was difficult for me to select the most suitable view, to determine what to show and how to show it, what to emphasize and what to subdue or leave out. This is where I hesitated and wasted time, as every novice does. It was lucky for me that Dr. Kelly had the remarkable gift of explaining with sketches. In a few simple but graphic lines he could show all the new ideas in connection with his operative work. There is no question that Dr. Kelly's genius for visualization and for sketching paved the way for his illustrators. He made it clear that the conception of a picture is the all important thing, not the plastic elaboration, the realism or the technical finish.

5. Another lucky factor was that Dr. Kelly let me study while working for him. Few employers would permit that. They want pictures for their money. I dissected and injected the pelvic and abdominal organs many times. No drawing was made by me without original study by injection, dissection, frozen section or reconstruction. When variations in adult forms puzzled the eye, the study of embryology gave the key. Many embryos and fetuses were injected, dissected, sectioned and studied. Had these studies been made for me by some one else, in order to save time, I would have benefited little; the finished dissection, injection or reconstruction would still in part have been an enigma to me. The eye and hand must work together to obtain the priceless information that automatically crystallizes into a mental image, which is the forerunner of the subsequent picture on paper. There is no other way, at least for the beginner.

If the artist has thus made sure of his ground, his drawing shows it. It is a truer, bolder, better picture and is done with greater speed.

6. Dr. Kelly also permitted me to help other illustrators while still in his employ. He even encouraged this digression. This paved the way for subsequent teaching of professional illustrators, of art students, medical students and members of the faculty doing research work. There is no better way to learn a subject thoroughly than by teaching it to others. My first pupils, of course, were my friends Becker (1895) and Horn (1898), who came to assist me in the work for Dr. Kelly and his staff. I tried to teach them the fundamental principles of gynecologic illustrating but had little to give in those days. The job was not of my making; it was wished on me. The truth is, we learned together. I was rarely more than a jump or two ahead of them. Confession is good for the soul.

7. Thousands of pictures were made by the three of us to illustrate the various books and articles written by Dr. Kelly and his associates. Each book marked an advance in our method of approach and technic.

It should be stated here that Dr. Kelly also permitted us to make illustrations for other departments—those of anatomy, embryology, physiology, pathology, surgery with its many subdivisions and obstetrics. This outside work retarded our regular illustrating, but Dr. Kelly invariably presented the pictures to his colleagues. This unselfishness broadened my field and ultimately led to the creation of the art department in March 1911. When Dr. Kelly's work ceased, I was tempted to go elsewhere. But my roots were deep in the ground and I was loath to leave Johns Hopkins.

8. This is where my friend Dr. Thomas S. Cullen came in. He had other plans. He had faith in our work, ideals and technic and wanted to keep them at Johns Hopkins. His dream was to create an art department in which the methods and technic which we had evolved during the wonderful Kelly period could be handed down to new generations of medical illustrators and spare them the years of trials and disappointments of their self-taught predecessors.

It is a matter of record that Dr. Cullen did all this single handed. No one else could or would have done it. He succeeded in interesting Mr. Henry Walters in the creation and, later on, in the endowment of a department of "Art as Applied to Medicine" at Johns Hopkins University School of Medicine. Horn had died, Becker's health failed and I was left alone. So it became my privilege to organize and develop this school from 1911 until 1940, a period of thirty years, very happy years to me.

Three names will ever be linked with the Department of Art as Applied to Medicine at Johns Hopkins University School of Medicine:

Dr. Howard A. Kelly, the master surgeon under whom I learned the subject. He laid the foundation for the department.

Dr. Thomas S. Cullen, the man of vision and persistence, who planned it.

Mr. Henry Walters, the keen business man, lover of art and philanthropist, who generously endowed it.

My teaching days are over now. The university, following its custom, has retired me, but I still do the work I love in the department of surgery.

THE ART DEPARTMENT, 1911-1940

During the thirty years of its existence the art department has trained nearly two hundred medical illustrators, carefully chosen from thousands of applicants. There are no two alike. Each has his or her own individual style. I can nearly always tell who made the picture without seeing the signature.

Those who have taken the course are employed in the important medical schools and clinics of the United States and Canada. A few of them are abroad. Their work can be found in the medical literature, exhibits, hospital records, lantern slides and the like.

The size of the class varied from four to twenty-three regular students a year; the average was ten. Every year a few professional illustrators were admitted as postgraduate students for intensive study in a special branch, mostly technic. Members of the faculty and a limited number of medical students received instructions in drawing—the former as an aid in their research, the latter because of their interest in and their talent for drawing and its obvious benefit in the study of medicine.

The instructions of the regular art students, the beginners, were as follows:

Since no illustration can be made without anatomic and histologic knowledge, the student begins in the

dissecting room, doing the work with his (or her) own hands, slowly and thoroughly. Because each student can have only a few bodies to study from, while the range of variations is legion, daily lectures and demonstrations accompany and augment the dissection. A large transparent ground-glass plate covers life size drawings of a skeleton, front, back and side views; also sections, properly coordinated. With charcoal and colored chalk these pictures can be altered before the student's eye to show variations in size, form and proportion due to sex, age or race; also physiologic, pathologic and postural changes, diseases and their course and operations; in brief, everything that concerns the illustrator. Each alteration requires only a few strokes, which are erased when the alteration is demonstrated and another type drawn—and so on.

While the student dissects and studies the skin, the ground-glass plate explains its phenomena in a multitude of variations. Then are taken up the bony landmarks, fat deposits, vessels, nerves, lymphatics and their variations and significance; muscles, tendons, ligaments and fasciae. Then come the internal organs, first in toto, then each organ separately with its variations and pathologic alterations.

Every structure and every organ is studied at the same time microscopically under low, medium and high power to give a complete picture.

The most important part of the student's work in the dissecting room, however, is sketching and drawing. Everything revealed by the student's eye and hand is put on paper immediately, while the impression is fresh. The sketches are made boldly and rapidly in black and colored crayons. Thousands of such sketches are made. They are the test that the student has grasped the subject.

They are valuable to him as forerunners of medical and surgical pictures. He has learned to study the subject in the form of pictures, not of words.

At the end of the year a recapitulation of the topography of the viscera is made by the study of frozen sections, sagittal and transverse.

Fresh material is employed, whenever necessary, to augment the studies on the cadaver and to correct post-mortem phenomena, alterations of form, consistency and color.

Many accessory methods are used to teach the student the correct approach to a problem in illustrating. It is always done in the form of pictures, either on paper, on the ground-glass plate or on the blackboard; occasionally by graphic description, made alive by expressive gestures with the hands. Nearly every discussion terminates with a diagram; a question asked by an alert pupil may lead to the creation of a helpful topographic sketch, sometimes startling in its originality. It is a stimulating habit to show the beginning, course and end result of a disease in an eloquent diagram. The medical literature can use more such pictures.

The student must also learn to make accurate, realistic pictures of objects placed before him. He must know how to pose and illuminate them so that their plastic rendition is simplified.

Much time in the class is given to this part of the training. No artist can create a picture unless he has first learned to imitate nature. Many pictures are made of fresh or hardened specimens from an operation or an autopsy, and, most important of all, realistic pictures of operative steps.

Paralleling these studies are complete instructions in accurate draftsmanship and perfect technic. All important technics must be mastered in order to make the original drawing or painting acceptable to the author, to the engraver and to the publisher. Several new technics were worked out in this department and are taught to the students. The pen and ink technic is by far the most useful, because a line drawing costs less to reproduce and is not easily ruined by inferior presswork.

Being thus equipped, the student is ready independently to plan and make finished pictures for publication. After many failures a moderate degree of success may be attained; occasionally there is a gem, even a little masterpiece.

The superior work of a talented student is quickly noticed by instructor and fellow-students, then by members of the medical and surgical staffs and then by visiting physicians. The student is asked to make drawings for them, which may start him on his way to getting a job.

APPLICANTS

It is generally accepted that medical illustrating is an intricate, highly specialized form of art requiring for its mastery systematic full time study over a period of from two to four years or even longer, according to the talent, speed and preliminary training of the applicants.

They come from colleges, art schools and high schools. I have found that good material may come from any of these.

1. Some applicants are born artists with exquisite technic and a poetic temperament but entirely ignorant of the basic branches of medical science and for some reason quite unteachable.

2. Others have a college background with a fine grasp of the medical aspect of their studies but are awkward in drawing; their eyes and hands do not work together.

3. A rare group of applicants is gifted in science as well as in art.

4. The last group is without talent in either. The applicants of this group assert that they are fascinated by medicine and its dramatic service to humanity and want to help, but mere interest in the subject is not enough. However, there are even here notable exceptions.

The applicant may be a man or a woman. The best age is between 20 and 24.

The qualifications in order of their importance are:

1. Keen interest in science, in nature and in all living things.

2. Ability to study intelligently, to observe accurately and to doubt the statements of authority.

3. Ability to draw and paint from nature free hand and with artistic charm.

4. Ability to visualize, to imagine a picture based on previous study and then give it reality on paper, either in contour alone or with convincing plasticity.

5. Technical skill in drawing, a trustworthy eye guiding an obedient hand, preferably the right.

6. Ability to stick to a task with tenacity and to be resourceful in the face of obstacles.

7. Good general health and normal vision.

OPPORTUNITIES

When a student has shown that he can make a correct and technically perfect picture, some member of the medical profession is apt to discover him and seek his

services. It is not the function of the instructor to find the niche into which he fits best.

While the important medical centers are now provided with the illustrators they need, there always seems to be room at the top. Institutions, clinics, research laboratories, hospitals, surgeons or groups of surgeons are usually interested in hearing of a new and promising artist. Vacancies occur in the ranks of medical illustrators through ill health, death, incompetence and other factors. These vacancies must be filled.

The following branches of medicine require illustrations: embryology, anthropology, anatomy (gross and microscopic), topographic anatomy applied to medicine and to surgery, clinical medicine and microscopy, pediatrics, pathology (gross and microscopic), psychiatry, research (such as on cancer), obstetrics, general surgery and its subdivisions neurosurgery, surgery of the eye, ear, nose, throat and chest, abdominal pelvic surgery (gynecology), genitourinary surgery (male and female) and orthopedic surgery.

An illustrator employed in one of these special fields might rightly be called a specialist, because of the limited range of his activity, and it might be stated that the training for a narrow field could be done in a relatively short time and that therefore a course of two or three years is unnecessarily long, a waste of valuable time. This, however, is not the case.

Every medical artist worthy of the name realizes that he has to know the entire human body and the entire field of medical illustrating before he can discover the branch for which his special talent and his chief interest and inclination fit him best. A medical student does the same and for the same reason.

Moreover, in many institutions an illustrator has to serve several departments and be prepared to draw all types of pictures in every known technic.

REMUNERATION

As every one knows, artists rarely make big money, and a medical illustrator is no exception. His work, if properly done, is an exceedingly important part of medical progress, teaching and dissemination of knowledge and should be adequately remunerated. In many instances, unfortunately, it is not.

It is as difficult to evaluate a fine medical drawing as a successful surgical operation. Is it worth as little as \$10 or as much as \$1,000? Who can say? A drawing is worth what the buyer is willing to pay. That seems to be the only answer. A drawing may look very simple but require a vast amount of thought and a great deal of preliminary study by a conscientious artist who cannot do slipshod work. On the other hand, it may look most elaborate and complex and yet permit of speedy completion.

If the artist is on a regular salary, the work is apt to be of higher quality. If he is paid by the hour or by the drawing, he is inclined to be superficial. There are many other factors causing fluctuations in price:

1. The cost of living where the work is being done.
2. The demands made by the artist because of habit, social status, age, sex.

3. Special gifts, such as originality of conception, exceptional thoroughness and technical skill, large experience, speed, endurance.

It must be admitted that at present it is somewhat difficult even for a talented pupil to find a job. The medical profession has troubles of its own, and many

institutions employing artists are in financial difficulties, but better days will come in due time and with them, I hope, better times for the medical illustrator.

An underpaid artist may find solace in the thought that he does something eminently worth while for the medical profession and, incidentally, also for mankind. He is on the "firing line" of medical progress and should consider it a privilege to be associated with the keenest minds in medicine, the original thinkers, sharing their labors, their hopes and doubts and their ultimate triumphs. And, as I said before, adequate reward usually comes their way in the end. I can assure the beginner that medical illustrating is a fascinating branch of applied art, full of intense interest in all its phases. There is far more satisfaction, I think, in producing a perfect picture which advances medical knowledge—no matter how little—than there is in painting a picture in the modern manner which no man would care to own and which in the last analysis is of doubtful value to mankind in these troublous times.

FRESH COMPOUND FRACTURES

TREATMENT BY SULFONAMIDES AND BY INTERNAL
FIXATION IN SELECTED CASES

WILLIS C. CAMPBELL, M.D.

AND

HUGH SMITH, M.D.

MEMPHIS, TENN.

Preliminary reports of the treatment of compound fractures with sulfonamides with or without metallic internal fixation, and as a rule with primary closure of the wound, were couched in rather conservative terms. After three years of experience with this method, certain favorable impressions deduced in the beginning can now be changed to fairly definite conclusions. The series subsequently to be reported is a representative cross section consisting of 50 private patients treated under optimum surgical conditions with adequate post-operative care and follow-up and 93 municipal hospital patients treated under less favorable conditions. The adoption of this method of treatment is sufficient indication that other routines previously utilized had not been entirely satisfactory.

In addition to the administration of sulfonamides and primary closure of the wound, metallic internal fixation has been utilized in 42 cases. While primary fixation in compound fractures has been used previously and satisfactory results have been reported by others, the safety and wider applicability of the method have been enhanced. The possible adverse effect on the percentage of primary healing by the introduction of foreign material into potentially infected wounds has been largely compensated by the local use of sulfanilamide. Improved metals for fixation, vitallium and stainless steel have been tolerated by the tissues to a much greater degree than the former highly electrolytic alloys. Vitallium was principally used after a thorough trial in open reductions of clean or closed fractures. In a smaller group, stainless steel wire, pins or nails were inserted with essentially the same degree of success.

Dr. Campbell died May 4, 1941.

Read before the joint meeting of the Section on Surgery, General and Abdominal, and the Section on Orthopedic Surgery at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 6, 1941.

Granting that the risk of nonunion or infection is slightly enhanced by the use of internal fixation, the percentage of malposition and shortening, even in the presence of infection or nonunion, is reduced to a minimum. The clinical demonstration that vitallium plates are relatively inert in the tissues has convinced us that the advantages of its use in connection with compound fractures usually outweigh any theoretical objection. The chief advantage of internal fixation lies in the fact that absolute immobilization with anatomic alignment can be secured and maintained without the impediment of cumbersome external fixation. Thereby, the entire injured extremity can be adequately observed and treated without fear of displacing fragments and without further trauma to the damaged soft tissues by movement of the fragments. Further, these fractures are more easily reduced immediately following the injury than at any time afterward. Accurate reduction unquestionably hastens union. Obliteration of dead space and pockets about the ends of the bones diminishes the likelihood of infection.

No attempt has been made to standardize the treatment to one set routine for all compound fractures. For such a method to be practical, injuries would have to be standardized, i. e. the degree of laceration or maceration of soft tissues, the amount of extraneous matter in the wound and the like. Treatment accordingly has varied with the severity of the injury. Those fractures with wounds formed by penetration of the soft tissues from within by the bone fragments were regarded as mild. Fractures produced by rifle or revolver bullets were placed in this category. The group of moderate fractures was those in which the soft tissue wound was extensive but wherein little or no dirt or foreign material had been introduced. The third group of compound fractures, with extensive damage to the soft tissues, with gross contamination by foreign material and with devitalization or obvious imminent necrosis of the soft tissues, was classed as severe fresh compound fractures.

In the treatment of compound fractures the patient's general condition is the primary consideration; on admission to the hospital, emergency measures are instituted to combat shock, hemorrhage and pain. The following points should be determined: the period of time that has elapsed since the fracture, whether the injury is compounded from the outside or has resulted from protrusion of the bones from within out, the extent of the wound, the type of fracture and the extent of injury to blood vessels, nerves, muscles and tendons.

Mild fractures are treated with a relative degree of conservatism. The field and the wound are thoroughly cleansed; a débridement limited to the superficial tissues is carried out, the wound closed and the fracture reduced and immobilized. The wound is not enlarged for the purpose of any extensive exploration or débridement of the depths of the wound. By so doing, additional organisms are introduced into the deep structures and those already present are disseminated.

Pistol shot fractures are treated as closed fractures unless an important tendon, nerve or vessel has been severed. Immediate exploration of the wound and removal of the bullet are more likely to invite infection than external fixation of the fracture followed by massive doses of sulfonamides.

In moderate or severe fractures, the preliminary cleansing process is carried out meticulously, the wound being irrigated and washed with from 4 to 5 quarts (liters) of saline solution. Surgical antiseptics are

applied only to the skin. Strong antiseptics or caustic solutions in the wound coagulate the proteins and cause necrosis of the superficial tissues, thus inviting rather than inhibiting infection. After application of surgical drapes, the wound is enlarged sufficiently for a thorough exploration of the entire wound. After a complete débridement, the irrigation of the wound is carried out again so as to expedite further removal of all foreign material. We are not laboring under the misapprehension or delusion that a sterile wound is the result of the most painstaking execution of this procedure. Rather, we hope to reduce the bacteria, foreign material and necrotic tissue to such a minimum that the natural defense mechanism of the remaining viable tissues, plus sulfonamides locally, will be adequate to prevent an infection.

Complete hemostasis is secured, restricting the use of ligatures to a minimum. Loose particles of bone are left in situ, since large defects between the fragments impede the progress of union. Small particles, with their periosteum and soft tissue attachments intact, may

TABLE 1.—Results of Treatment in Two Hundred and Eighteen Fresh Compound Fractures

Sulfonamide Therapy			No Sulfonamide Therapy		
	Num- ber	Per Cent		Num- ber	Per Cent
Not infected.....	117	81.8	Not infected.....	50	66.6
Union.....	97		Union.....	43	
Nonunion.....	0		Nonunion.....	6	
Incomplete.....	11		Incomplete.....	2	
Infected.....	26	18.1	Infected.....	25	33.3
Union.....	13		Union.....	13	
Nonunion.....	5		Nonunion.....	4	
Osteomyelitis.....	(12)		Osteomyelitis.....	(8)	
Amputation for gas gangrene.....	4		Amputation for gas gangrene.....	3	
Patient died.....	2*		Patient died.....	3†	
Incomplete.....	2		Incomplete.....	2	

* One patient died of gas gangrene following a shotgun wound of the ilium and abdomen and one of septicaemia and bacterial endocarditis.
† Two patients died of gas gangrene and one of streptococcal septicaemia.

serve as small grafts and possibly stimulate osteogenesis. Fragments of bone covered with foreign material such as grease or dirt, which cannot be thoroughly cleansed, are an exception to this rule. Metallic internal fixation is applied without hesitancy if it is indicated. From 5 to 20 Gm. of sulfanilamide crystals is then placed in the wound and carefully distributed throughout the entire extent of the wound. In deep and extensive wounds, a few interrupted approximating catgut sutures are used in the deep structures, the skin being loosely approximated with silk. Only under the following circumstances is the wound packed open with petrolatum gauze: (1) when the wound is of more than twelve hours' duration; (2) when the soft tissues have been so extensively mangled that closure of the skin is impossible; (3) when a complete débridement of the devitalized tissues or the thorough removal of all foreign material is impossible, as in a shotgun wound of a fleshy part.

During the latter part of this series we have used sulfathiazole by mouth postoperatively as soon as the nausea ceases, in doses of 1 Gm. every four hours. The use of sulfanilamide locally in the wound, followed by sulfathiazole by mouth, seems to be the most efficient and desirable combination of sulfonamides that

we have tried. No deleterious effects, either to the soft tissues or to the bone, have been noted when sulfanilamide was placed in the wound. In only 1 patient have any serious effects been noted as a result of the use of sulfonamides. In this patient, who had received 39 Gm. of sulfanilamide, bilateral staghorn renal calculi developed that terminated in a fatal pyonephrosis.

TABLE 2.—Results of Treatment with Sulfonamides in Mild, Moderate and Severe Fresh Compound Fractures

	Mild Fractures		Moderate Fractures		Severe Fractures	
	Internal Fixa- tion	No Internal Fixa- tion	Internal Fixa- tion	No Internal Fixa- tion	Internal Fixa- tion	No Internal Fixa- tion
Not infected.....	1	49	10	29	16	12
Union.....	1	46	7	25	9	9
Nonunion.....	0	0	2	1	4	2
Incomplete.....	0	3	1	3	3	1
Infected.....	1	0	2	1	12	10
Union.....	1	0	0	0	7	5
Nonunion.....	0	0	2	0	3	0
Amputation.....	0	0	0	0	(3)	(4)
Gas gangrene.....	0	0	0	0	2	2
Osteomyelitis....	(1)	0	0	0	(7)	(4)
Patient died.....	0	0	0	0	0	2
Incomplete.....	0	0	0	1	0	1

From statistical studies, patients who received sulfonamides both locally and by mouth had approximately the same percentage of infection as those who received the drug only by mouth. Despite this, we expect to continue the use of sulfonamides locally; obviously, the greatest concentration in the wound at the earliest possible moment should have a great theoretical advantage in preventing the propagation of bacteria, thereby allowing the natural defense mechanisms to dispense with the remainder. On the contrary, if bacteria have penetrated deeply and an infection is already established before an adequate blood concentration can be built up by mouth, the sulfonamides cannot properly exercise their bacteriostatic and prophylactic effects. The subcutaneous or rectal administration of sulfonamides during the postoperative period of nausea has been discontinued entirely, as the amount of drugs introduced is so small as not to warrant the effort.

In order to evaluate the results of sulfonamide therapy, a comparative analysis was made between the

TABLE 3.—End Results of Gunshot Fractures

Pistol and revolver shot fractures	
Infected	1
Not infected	27
Shotgun fractures	
Healed by primary intention.....	2
Gas gangrene	2
Pyogenic infection	4

present group of 143 cases and a consecutive series of 75 compound fractures in which neither internal fixation nor the sulfonamides was used. The results of this study are summarized in table 1. There was approximately the same percentage of union and nonunion, and the average time required for union in the two groups was approximately the same. Primary closure of the wound, in conjunction with sulfonamide therapy, certainly did not increase the incidence of gas gangrene,

nor was there a sufficiently striking decrease in the incidence of gas gangrene to indicate a particularly beneficial effect of the sulfonamides on the gas producing organisms. Of the 5 patients with gas gangrene, 4 lived following amputation; in the other gas gangrene developed following a shotgun wound of the ilium and abdomen, and the patient died.

The incidence of infection was reduced from 33.3 per cent to 18.1 per cent. Only 2 of 143 patients who received sulfonamides died from infection, as compared with 3 in the control series of 75.

Since the possibility of infection in a fresh compound fracture is commensurate with the degree of laceration and maceration of the soft tissues, the 143 fresh compound fractures were further analyzed as mild, moderate or severe (table 2). Prior to the use of sulfonamides, one could reasonably expect healing of the wound without infection in a mild type of compound fracture in a high percentage of cases. Consequently, only 1 infection occurring in 51 mild compound fractures is not considered as conclusive evidence of any beneficial prophylactic value of sulfonamides.

Included in this series of 51 mild fractures were 28 pistol or revolver shot fractures. Twenty-seven of these healed without infection.

Further analysis will be limited entirely to the 92 moderate and severe compound fractures. In this group, 40 patients had internal fixation with 14 infections and 11 nonunions. In the group of 52 with no internal fixation, infection occurred in 11 and in 3 nonunion persisted. These statistics exaggerate the possible theoretical adverse effects of metallic fixation on healing of the soft tissues and the bone, as internal fixation was employed in a group of severe fractures in which a high percentage of infections and nonunions could be expected. There was little difference in the average period of union between those with and those without fixation.

Better anatomic and functional results have been secured by internal fixation in conjunction with sulfonamides. Certainly the 117 patients whose wounds healed following primary closure are in a better residual status than if the wounds had been packed with petrolatum gauze and had healed secondarily with an extensive permanent scar. Even in the 26 cases which became infected, infection could not be considered as severe as compared with the infections prior to the use of sulfonamides. Most of the cases listed as becoming infected did not run a febrile course; nor were there copious quantities of purulent material exuding from the wounds for weeks, associated with emaciation, anemia and sepsis, which would previously have been anticipated. It was also striking that drainage was not as persistent and that wounds in infected cases healed in a much shorter period than one would expect.

We acknowledge the fact that, prior to the use of sulfonamides, thorough mechanical cleansing of wounds and primary closure may have given many good results, but the procedure also eventuated in many acute fulminating infections and disastrous sequelae. Sulfonamides by mouth and in the wound, in conjunction with a meticulous mechanical cleansing and débridement, have definitely broadened the applicability of internal fixation and primary closure to embrace a large group of compound fractures with a commensurate improvement in end results.

869 Madison Avenue.

ABSTRACT OF DISCUSSION

DR. HAROLD R. BOHLMAN, Baltimore: I wish to emphasize a few points in connection with this excellent paper. First, the treatment of shock in these cases and the use of local anesthesia, nerve block or spinal anesthesia to lessen shock. Second, thorough wound toilet with copious lavage, as the authors mention, with removal of all foreign material. Third, the matter of débridement. This word is the most loosely used term in surgery today. How much tissue should be cut away? "Complete débridement" indicates the removal of all traumatized tissue. Too often the surgeon's scalpel does more damage than has the trauma. In a fresh wound how can the surgeon determine with his eye how much tissue to cut away, how much has been actually devitalized? I have treated some 12 patients, derelicts of the streets and alleys, individuals of the poorest class, the poorest risks, without any sterilizing solution on the skin or in the wound, no iodine, no washing, simply reducing the fractures without even washing my hands, putting on a posterior splint, with petrolatum gauze over the wound; raising the blood level of sulfanilamide to 10 mg. per hundred cubic centimeters at once and holding it there; transfusing, if necessary. These wounds have all healed without infections. In some of them we recovered staphylococcus gas bacilli of one type or another, but not a single case of gas gangrene resulted. In many instances in which the skin was greatly macerated it served as a bridge and but little scarring resulted. Fourth, one should make incisions through the fascial planes to avoid internal tension. They should always be longitudinal in the extremities, should open contaminated fascial compartments. Fifth, gas gangrene is a disease of occluded circulation. One must consider the basic circulation in estimating a wound. If it is gone there is no choice but to amputate. Integrity of arterial venous and capillary circulation is necessary. If the slightest pressure occludes the latter and clostridium spores are present in injured tissue, gas gangrene will surely result. Tension must be considered at all times. It must be avoided, whether internal or external, caused by sutures, dressings, casts, petrolatum packs, swelling or by the method of fixation. Sixth, sulfa drugs must be carefully checked and blood transfusions resorted to whenever necessary. In Johns Hopkins since we have been using sulfanilamide prophylaxis in traumatic wounds we have not had a single death since the fall of 1937.

DR. J. E. CANNADY, Charleston, W. Va.: At the Charleston General Hospital we have had a rather extended experience in the use of sulfanilamide applied to and in wounds locally. Altogether we have used this drug in several hundred such cases. In a recent conversation the head of our orthopedic and traumatic department, Dr. H. A. Swart, told me that he has in the last two years treated approximately 50 cases of compound fractures with sulfanilamide locally, following a reasonable cleaning and débridement, and that his results have shown a marked improvement over the cases treated previously without sulfanilamide. Some have said that the application of sulfanilamide or the placing of sulfanilamide in the wound delays healing. I think it does to some extent, though this delay is slight. However, when we measure slightly delayed healing against the possibility of infection I think that the odds are distinctly in favor of the sulfanilamide treated cases. As to delayed healing, I have found that there is somewhat more delay in cases in which large quantities of sulfanilamide have been placed in the wound, but that if the amount used is comparatively small the delay is very slight. I feel convinced that the use of sulfanilamide both in the wound and internally has great value.

DR. HUGH SMITH, Memphis, Tenn.: I purposely avoided any argument relative to the method or Orr and the Carrel-Dakin method in comparison with the present treatment that has been described. I have also tried to avoid any argument as to whether wounds should be or should not be closed. We claim no originality for this treatment and we have no ax to grind; consequently the series was analyzed without prejudice, without bias and without preconception. We do not wish to standardize our method or to eliminate or exclude other methods of treatment. I shall continue to maintain an open

mind about other forms of treatment that may be introduced subsequently, but for the present in civil practice this method has given a better percentage of good results than we previously had. I am willing to say now that if an as carefully analyzed series as this is presented for any other form of treatment I will gladly change. Summing up the treatment, for compound fractures conservatism, for pistol and revolver shot fractures conservatism, for moderate and severe fractures exploration, débridement, sulfanilamide in the wound, fixation if indicated, and closure of the wound, petrolatum-pack drainage or, if one prefers, Orr or Carrel-Dakin methods when thorough débridement is impossible or when closure without extensive tension is impossible because of mangling of soft tissues.

THE INFLUENCE OF EXPECTORANTS AND GASES

ON SPUTUM AND THE MUCOUS MEMBRANES
OF THE TRACHEOBRONCHIAL TREE

PAUL HOLINGER, M.D.

FELIX P. BASCH, M.D.

AND

HENRY G. PONCHER, M.D.

CHICAGO

The treatment of pulmonary or bronchial suppuration is a frequent task of the otolaryngologist who devotes a portion of his time to bronchology. His efforts in this field are identical to his efforts in the treatment of suppurative sinus disease, where they are directed toward restoring the normal physiologic function through establishing and maintaining adequate drainage. The mechanical drainage of the pathologic secretions in the bronchi is accomplished by the action of the cilia, the respiratory movements, the tussive squeeze of the cough reflex, the cough itself and, finally, expectoration. This drainage depends to a large degree on the liquefaction of these secretions by the action of the glands of the more normal bronchial mucosa. That these processes, both the cellular activity and the more gross mechanical ones, may be immeasurably aided by expectorants, by postural drainage and by bronchoscopic suction is well recognized. Means of increasing the efficiency of these measures are readily available; an evaluation of their actions, suggestions regarding their use and new methods which may be employed are herein presented.

The most commonly used means of increasing endobronchial drainage at the present time consist in the administration of one or more of a multitude of expectorant drugs and the age old use of steam inhalations. That these agents are of significance in laryngology and bronchology is apparent from a review of the recent otolaryngologic literature dealing with such subjects as acute laryngotracheobronchitis, bronchiectasis and postoperative massive collapse of the lung. But while they stand the test of clinical trial in a general way, their use is to a large degree empirical. Consequently, to determine the mode and site of action of these widely used therapeutic agents, studies regarding the physiology of bronchial secretions and expectoration were undertaken. These studies, reported in detail else-

where,¹ consisted in physical and chemical analyses of sputum obtained from patients with mild or low grade bronchiectasis. These patients, having a moderately productive cough, were selected because sputum, in any measurable quantity, is a pathologic product and does not exist in a manner in which it can be collected for experimental study in normal individuals. Advanced cases of pulmonary suppuration were not used. By means of postural drainage and bronchoscopic suction, sputum from various parts or levels of the tracheobronchial tree could be obtained and studied independently. It was found that sputum undergoes a series of changes in its course through the bronchi. In the most dependent bronchi its viscosity was found to be greatest. As it advances from these recesses by the tussive squeeze, secretory pressure and respiratory movements to the larger bronchi, it becomes thinner through actual dilution and may be coughed out. The physiology of this process of dilution need not be discussed here. However, it is essential that it be aided to permit adequate, prompt and continuous drainage, because an analysis of the extremely viscous mucopus found in the deepest portions of the bronchial tree suggests that this material plays an extremely important role in the development of bronchopulmonary suppuration. Its presence is confirmed daily in bronchoscopic clinics, and it is discussed in detail by the Jacksons² in their observations on bronchiectatic patients. It is obtainable only through bronchoscopic suction, remaining in the bronchi even after thorough postural drainage. This was graphically demonstrated by serial roentgenograms of the chest of a boy with a saccular bronchiectasis of the right lower lobe. These films were taken before and after postural drainage and then following bronchoscopic aspiration. Anteroposterior and right lateral films of the chest before and after thorough postural drainage showed no change in the radiolucency of the area of bronchiectasis. He was then drained bronchoscopically and a large quantity of this thick pus obtained. A third roentgenogram, taken with the same technic, then showed the areas of radiolucency typical of the disease.

These observations, in a measure, stress the importance of the role which bronchoscopic aspiration plays in the management of bronchopulmonary suppuration. Stagnation of the viscid mucus in the terminal bronchi is in part responsible for the bronchial obstruction leading to the destructive changes which take place in the mucosa of the bronchi to produce bronchiectasis. Unaided, the physiologic process of dilution of secretions, so essential to spontaneous pulmonary drainage, is an extremely slow one. Consequently, a study of the influence of various agents on the bronchial secretions and bronchial mucosa was a logical sequence to the physiologic experiments just mentioned. The pharmacologic actions of expectorant drugs, steam and gases were evaluated by noting their effect on the viscosity, the p_H and the chemical content of the sputum in the major bronchi and on that in the dependent, terminal bronchi, as well as their effect on the mucosa.³ The well known clinical fact that the expectorant drugs and steam lowered the viscosity of expectorated sputum

This work was supported by a grant from the Theodore B. Sachs Laboratory Memorial Fund.

Read before the Section on Laryngology, Otology and Rhinology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 4, 1941.

From the Department of Pediatrics and the Department of Otology, Rhinology and Laryngology (Broncho-Esophagology) of the University of Illinois College of Medicine and the Children's Memorial Hospital.

1. Basch, F. P., and Holinger, P. H.: Physical and Chemical Properties of Sputum; The Factors Determining Variations Through-out the Tracheobronchial Tree, to be published.

2. Jackson, Chevalier, and Jackson, C. L.: Bronchoscopy, Esophagoscopy, and Gastroscopy, 1934, Philadelphia, W. B. Saunders Company p. 319.

3. Basch, F. P.; Holinger, P. H., and Poncher, Henry G., to be published.

was confirmed. However, it was repeatedly found that the most dependent secretions, responsible largely for the destructive changes associated with their presence in the lower bronchi,⁴ were not influenced physically or chemically by these agents.

The manner in which these findings influence various obstructive laryngeal or bronchopulmonary suppurative processes is important in their clinical management. Attention may first be directed to laryngotracheobronchitis because it has been discussed from other angles frequently before this group. As has been pointed out by Richards,⁵ Gittens,⁶ the Jacksons,⁷ Brennemann, Clifton, Frank and Holinger,⁸ the obstructive element in this disease is not alone the inflammatory edema but the secretions and products of inflammation which adhere to the laryngeal and bronchial surfaces. The efficiency of an atmosphere containing a high relative humidity as an expectorant was strikingly apparent in the results of the experiments just described. However, when steam alone is used to attain the desired humidity the temperature of the room, or the croup tent if the child is confined under a closely guarded crib covered with sheets, becomes unbearable and oppressive. The use of a room saturated with moisture produced by a mechanical humidifier was found to be more efficient than one in which steam was used.⁹ Certainly in such an atmosphere expectoration became more efficient.

A second clinical application of this problem is associated with the management of postoperative collapse of the lung. This complication, formerly considered to be a postoperative pneumonia, is now recognized as a distinct clinical entity produced as, Gairdner¹⁰ suspected in 1850, by viscid, inspissated mucus acting as a bronchial plug to obstruct a major bronchus. Its prompt relief by the removal of secretions from the bronchus has been demonstrated innumerable times by all endoscopists. Analysis of this obstructing secretion shows it to have an extremely high measured viscosity which accounts, in part, for the failure of the high normal processes to eliminate it from the bronchi. While bronchoscopic suction is reserved for the advanced stages of this disease, carbon dioxide and other means of increasing both the rate and the depth of respiration have been employed for a number of years by anesthesiologists in removing obstructing secretions and in improving the ventilation of the lung, both before or, if necessary, after bronchoscopy. Even in a prophylactic manner, many surgical clinics use carbon dioxide routinely following anesthesia to aid in preventing postoperative pulmonary complications. Consequently, a study of the influence of this gas on the bronchial mucosa and on secretions seemed indicated. Again using patients with low grade bronchiectasis, carbon dioxide was administered by mask at varying intervals

prior to a bronchoscopic examination. Following the administration of this gas it was noted that the patients consistently had less secretion in their bronchi than they had had without carbon dioxide in spite of the fact that they had not coughed up appreciable quantities. It was also noted that the measured viscosity of this secretion was constantly lower than it had been when carbon dioxide was not used and that there was practically none of the extremely viscid secretion previously noted in the most dependent bronchi. An analysis of the sputum obtained following the use of carbon dioxide demonstrated that an actual dilution had taken place. This was further confirmed by the fact that, together with a lowering of the viscosity of the most dependent, aspirated sputum there was a reduction in its organic and inorganic content. This had not been accomplished either with steam or with the expectorant drugs.

The changes in the character of the mucosa were likewise striking. A definite hyperemia of the bronchial mucosa which was more than "normal" for these areas was noted in the parts of the lung involved in the pathologic process. It was significant that this hyperemia did not involve other parts of the air passages in which the mucosa was normal.

Thus, in a sense, carbon dioxide may be considered as an extremely efficient expectorant. It alone reaches the deeper, very obstructive type of secretion which must be frequently and efficiently drained to prevent serious types of permanent pulmonary or bronchial damage. It is apparent that the action of carbon dioxide is in part dependent on its ability to stimulate an actual resorption of secretions. However, its most important actions are to enforce deeper, more active respiratory movements as well as to liquefy the sputum and stimulate the cough reflex. By evacuating the more dependent bronchi, sputum otherwise inert is brought to a level from which it can be coughed out easily or removed more efficiently by direct suction through the bronchoscope.

The use of carbon dioxide as an expectorant suggests a new and wider therapeutic use for this gas. The following three cases illustrate this action:

O. B., a girl aged 11 years, was admitted to the Children's Memorial Hospital acutely dyspneic and cyanotic. Dyspnea had begun two weeks previously following removal of nasal polyps and was associated with a constant, nonproductive cough. Physical examination demonstrated definite dullness on both sides of the chest and many fine and coarse, bubbling rales throughout. Roentgen ray examination showed an extensive bilateral infiltration extending from the hilus, the most severe involvement being over the middle lobe, which was completely atelectatic. A diagnosis of bronchial asthma, complicated by obstructive pulmonary suppuration, was made. Her cyanosis was relieved by oxygen, but the dyspnea and nonproductive cough continued. Large doses of ammonium chloride and iodides were given, but her cough did not become productive. Thick mucopus was removed by bronchoscopic aspiration, but postural drainage was unsuccessful. The use of carbon dioxide inhalations by mask finally liquefied the secretions shortly after this therapy was instituted and for the first time the child expectorated easily on postural drainage. The removal of secretions bronchoscopically was likewise facilitated. Her improvement has been steady and her chest roentgenograms have shown progressive clearing.

R. J., a boy aged 4 years, had had numerous upper respiratory infections, attacks of bronchopneumonia and asthmatic attacks throughout his life. For the year and a half prior to admission to the Children's Memorial Hospital he had had a productive cough, gradually increasing dyspnea and occasional attacks of cyanosis. Physical examination showed a

4. Holinger, P. H.: The Role of Inflammatory Bronchial Obstruction in the Etiology of Bronchiectasis, *Ann. Otol., Rhin. & Laryng.* **47**: 1070 (Dec.) 1938.

5. Richards, Lyman: Fulminating Laryngotracheobronchitis, *Ann. Otol., Rhin. & Laryng.* **42**: 1014-1040 (Dec.) 1933; pathologic report by Sidney Farber.

6. Gittens, T. R.: Laryngitis and Tracheobronchitis in Children: Special Reference to Nondiphtheritic Infections, *Ann. Otol., Rhin. & Laryng.* **41**: 422-438 (June) 1932.

7. Jackson, Chevalier, and Jackson, Chevalier L.: Acute Laryngotracheobronchitis, *J. A. M. A.* **107**: 929-932 (Sept. 19) 1936; Acute Laryngotracheobronchitis: Bronchoscopy, Esophagoscopy and Gastroscopy, Philadelphia, W. B. Saunders Company, 1934, p. 311.

8. Brennemann, Joseph; Clifton, Willie Mae; Frank, Albert, and Holinger, Paul: Acute Laryngotracheobronchitis, *Am. J. Dis. Child.* **55**: 667-693 (April) 1938.

9. Eimerman, Miss Lucille: Nursing Care of Laryngotracheobronchitis at Children's Memorial Hospital, *Hosp. Management* **47**: 35 (March) 1939.

10. Gairdner, W. T.: On the Pathological State of the Lung Connected with Bronchitis and Bronchial Obstruction, *Month. J. M. Sc.* **11**: 123-138, 230-246, 1850.

slight, undernourished child who was somewhat barrel chested, dyspneic, and on the slightest exertion had some intercostal indrawing. Many bubbling, moist rales were heard over the entire chest. The heart was essentially normal considering the advanced pulmonary involvement. Bronchoscopic drainage was instituted and large quantities of extremely thick, viscid pus were repeatedly aspirated, but he failed to cough it up spontaneously. Because of the high viscosity of the pus present in the trachea and bronchi, first steam and later steam and carbon dioxide inhalations were administered as often as six times a day. Following these administrations he could raise sputum spontaneously during postural drainage. His sputum was definitely thinner. The attacks of cyanosis became fewer in number, and finally there was a decrease in the amount of sputum. It should be mentioned that the use of carbon dioxide in this manner is not contraindicated by attacks of cyanosis unless the cardiac reserve has been greatly diminished. The precaution of limiting its administration to short periods of time in extreme cases should be observed. An expectorant drug, fluid extract of senega, was likewise given.

H. H., a medical resident, sought relief of a dry, unproductive cough which had been present several weeks. He had had no result from the usual expectorants and was unable to raise secretion satisfactorily, which apparently was producing his irritating cough. Mirror examination of the larynx showed a chronically inflamed mucosa. The chest roentgenogram showed a very slight peribronchial infiltration, and the physical examination revealed a few scattered rales in the bases of both lungs. Carbon dioxide inhalations were administered four to five times a day by means of a mask held close to the face for periods of five minutes. Following the first administration he raised a moderate amount of viscid, grayish mucus. Throughout that and the succeeding day expectoration became regular and the material less viscid. It ceased after the third day, and the cough disappeared entirely.

Reviewing in brief the action of carbon dioxide in these three cases, it will be noted that prior to the administration of carbon dioxide even the strongest efforts of the patients to raise obstructing secretions were unsuccessful. The dilution of the secretions and their spontaneous expectoration began only after the carbon dioxide was administered.

Because of the frequent and widespread therapeutic use of oxygen, studies similar to those made regarding the action of carbon dioxide seemed indicated. Physical and chemical changes in the sputum following its administration and bronchoscopic observations of the mucous membranes of the trachea and bronchi were noted. Oxygen was administered by mask or by means of a nasal catheter. Examination of expectorated sputum following various periods of oxygen administration showed an increase in the viscosity of the sputum as well as an increase in its content of organic and inorganic substances. The extent to which these factors had been increased suggested that the action of oxygen had been one of concentration of the sputum. This was confirmed by the bronchoscopic picture. The tracheobronchial mucosa was pale or even blanched in appearance following oxygen administration, and the measured viscosity of aspirated mucus had decidedly increased over the usual measured viscosity of the aspirated mucus of the same patient without oxygen. A clinically important observation was the adherence of plaques of mucus to the bronchial walls, an observation never noted on the same patients without oxygen inhalations. Efforts were made to neutralize this undesired effect of oxygen on mucosa and sputum by the addition of 5 per cent carbon dioxide or steam inhalations administered in conjunction with the oxygen therapy. It was not possible to change the qualities of the sputum with either of these agents alone; only

by combining oxygen with carbon dioxide and steam could this effect be neutralized. Further studies must be made to determine whether higher concentrations of carbon dioxide alone would be as efficient as the combination of steam and 5 per cent carbon dioxide.

These findings become especially significant in the management of obstructive laryngeal diseases as well as in the routine administration of oxygen. As Davison¹¹ pointed out, the use of an oxygen tent in the treatment of laryngeal obstruction complicating laryngotracheobronchitis may defeat the purpose of the oxygen by creating even greater obstruction through the desiccating action of oxygen. To alleviate this, he has provided mechanical humidification for his oxygen tents and has accomplished the desired result in significantly reducing the mortality in his series of cases.¹²

Thus, in a sense, steam or humidification and carbon dioxide may definitely be considered as expectorants of great efficiency, and oxygen an antiexpectorant. Certain drugs, most notably codeine and atropine, fall into this second classification of antiexpectorants as demonstrated experimentally, the former by an increasing, cumulative effect when the drug is repeated daily, the latter by inhibiting secretions for a short time following its administration.

CONCLUSIONS

A certain rationalization of therapeutic procedures used in the management of bronchopulmonary suppurations and obstructions may be suggested to coincide with the bronchoscopic observations and a study of the effect of therapeutic agents on sputum.

In general, it may be stated that factors responsible for liquefying sputum within the bronchi, thus aiding in its evacuation, consist of those agents which will increase the hyperemia of the mucosa, as well as those which will increase the rate and depth of respiration.

The action of the expectorant drugs is almost uniformly favorable in liquefying a portion of the sputum which lies in the first and second division bronchi but rarely affects the dependent viscid secretions in the peripheral bronchi.

The actions of gas inhalations are quite specific, and they grossly influence the physical and chemical qualities of both the expectorated and the bronchoscopically obtainable sputum as well as the character of the bronchial mucosa. Steam inhalation, or the inhalation of a high humidity atmosphere, results in the liquefaction of sputum. Carbon dioxide has an action quite similar to that of steam, but to a greater degree. And, in addition, it increases the resorbing power of the bronchial mucosa; consequently it may be considered an extremely efficient expectorant.

Oxygen acts very specifically as an antiexpectorant and therefore its use alone is contraindicated in obstructive lesions whose obstruction is in part, at least, due to copious, viscid secretions. This deleterious effect may be neutralized partially or wholly through the addition of steam and 5 to 10 per cent carbon dioxide. In this manner not only the tremendous value of oxygen in alleviating the symptoms of respiratory embarrassment or even respiratory decompensation is retained, but also necessary aid in removing the obstruction is administered.

The use of codeine and atropine at regular intervals over long periods of time is contraindicated in

11. Davison, F. W.: Some Observations on the Control of Temperature and Humidity in Oxygen Tents, *Ann. Otol., Rhin. & Laryng.* 49: 1053 (Dec.) 1940.

12. Davison, F. W.: Personal communication to the author.

bronchopulmonary suppuration producing obstructive symptoms; however, the use of atropine prior to bronchoscopy may be justified in reducing the total amount of secretion and thus making the procedure easier for the patient.

Specifically, the use of the various agents described may be of distinct advantage in the treatment of certain diseases in manners determined through these studies. In bronchiectasis and in certain types of asthma in which bronchial obstruction plays a role in the symptomatology and pathology, frequent inhalations of carbon dioxide by mask, together with steam inhalations, may be used to augment the postural drainage and bronchoscopic aspiration which are fundamentally important. The use of steam and carbon dioxide between bronchoscopies, and especially shortly prior to bronchoscopy, is indicated if the sputum is known to be extremely thick and tenacious. Such therapy greatly enhances the action of any expectorant drug which is being administered.

In laryngotracheobronchitis, the use of a room kept at 70-75 F. with a relative humidity of 80-95 per cent provides satisfactory conditions for liquefying secretions. If, because of an increasing edema, obstruction of the airway progresses in spite of the removal of secretions, oxygen may become necessary. In such instances adequate provision for a high degree of humidity in the oxygen tent is essential. The attachment of a mechanical humidifier to the tent in the manner suggested by Davison is the most practical means of accomplishing this.

Postoperative massive collapse of the lung, produced by the occlusion of a major bronchus by viscid mucopus, is almost always spontaneously relieved if the patient can be encouraged to breathe deeply and cough. Steam inhalations aid in liquefying secretions and thus facilitate their removal, but carbon dioxide has become the most commonly used expectorant in the treatment of this disease because of its extremely efficient action in increasing the rate and depth of respiration as well as in aiding to liquefy the secretions. Actual bronchoscopic suction when these agents fail, or if the condition of the patient demands immediate intervention, must always be available.

The influence of the agents studied on the mucosa and inflammatory products of the nasal accessory sinuses has not been studied in detail. It remains to be seen whether an inflamed mucous membrane of the upper respiratory tract is similarly responsive to carbon dioxide when this action is not dependent on an actual increase in the respiratory movements.

1819 West Polk Street.

ABSTRACT OF DISCUSSION

DR. H. G. PONCHER, Chicago: Chronic cough has incited therapeutic attempts out of proportion to a great many other symptoms in medicine. There is a tendency to overtreat cough as a symptom, particularly in infants and young children. The points that Dr. Holinger brought out are of particular interest in this phase of practice. When a child or an infant is seriously ill with cough, there is a tendency to put such a patient on opiate-containing cough mixtures or mixtures containing belladonna or atropine or, if the patient is cyanotic, there is the compulsion to resort to routine use of oxygen without first attempting to remove the obstructing factor which produces cyanosis. These procedures Dr. Holinger has shown to be definitely antiexpectorant in action, and any one who has had experience has observed that the patients are sometimes not only not benefited but in some cases actually harmed. The statement

is often made that when a patient receives oxygen through a bottle or a tent there is a sufficient amount of moisture in the gas to prevent any drying of secretion. That, in our experience, is not true. The patients who receive oxygen therapy alone usually have a difficult time bringing up sputum. Dr. Holinger's contribution to this phase of treatment is very important. Not only were we able to get material for examination, but his direct observation of the bronchial tree was important in corroborating changes that were formerly surmised. Carbon dioxide may not only be used in conditions of atelectasis or bronchiectasis but may be extended to the treatment of conditions that formerly never suggested its use. I refer particularly to the treatment of acute bronchitis, in which the sputum is very tenacious and is difficult to raise. The treatment with carbon dioxide results in liquefaction and thinning of the secretion, so that the child is able to breathe freely and raise the material. Severe asthma in children is much improved by the use of carbon dioxide. Other conditions, like pertussis, in which the infant or child almost strangles on thick, tenacious mucus, are also definitely benefited by such therapy in conjunction with moist air. I would like to emphasize again the important clinical implications that Dr. Holinger brought out; the routine use of atropine and belladonna derivatives, opiates and oxygen without carbon dioxide and moist air should be condemned, and the beneficial effect of pure carbon dioxide inhalations in conjunction with moist air in conditions which ordinarily do not respond to the usual expectorant measures.

Clinical Notes, Suggestions and New Instruments

CEPHALIC TETANUS ACCOMPANIED WITH PARALYSIS OF THE FACIAL NERVE AND GEN- ERALIZED TETANUS

WILLIAM W. TRIBBY, M.D., AND CARROLL H. LONG, M.D.
NEW ORLEANS

Only 12 cases of cephalic tetanus accompanied with paralysis of the facial nerve have appeared in the American literature, although well over 100 instances have been reported in foreign publications. In 1895, Willard¹ reviewed 74 cases of cephalic tetanus and reported the first case in America associated with paralysis of the facial nerve. In 1907 Eastman² wrote a short review of the cases reported by Willard,¹ Lange³ and Lloyd⁴ and added 3 previously unrecorded cases. He included reports on only those cases in which there was paralysis of one or more cranial nerves. The only other review of the American literature has been that of Brown,⁵ who in 1912 found 93 cases reported in the world literature and added 1 of his own. Since that time 1 case has been reported by each of the following authors: Carson,⁶ Carr,⁷ Lewis,⁸ Gray⁹ and Watkins.¹⁰ In addition to these reports, we have found 3 cases of cephalic tetanus without paralysis of the facial nerve. Irvin¹¹ reported a case of generalized tetanus which followed a severe injury to the right eye. Bishop, Du Bosc and Hamlin¹² reported a

From the Department of Pathology (Dr. Tribby) and the Department of Surgery (Dr. Long) of the Tulane University of Louisiana School of Medicine.

1. Willard, De F., and Johnston, J. L.: Tetanus Cephalic, Tr. Coll. Physicians Philadelphia 17: 27, 1895.

2. Eastman, F. G.: Cephalic Tetanus in American, Neurographs 1: 8, 1907.

3. Lange, H.: A Case of Tetanic Hydrophobia or Cephalic Tetanus, Brooklyn M. J. 10: 401, 1896.

4. Lloyd, J. H.: Cephalic Tetanus with Paralysis of Both Seventh Nerves, J. A. M. A. 45: 1072 (Oct. 7) 1905.

5. Brown, A. J.: Cephalic Tetanus, Ann. Surg. 55: 473, 1912.

6. Carson, A. J.: A Case of Acute Traumatic Cephalic Tetanus, Cincinnati Lancet-Clinic 113: 338, 1915.

7. Carr, G. B.: Cephalic Tetanus: Case, Kentucky M. J. 26: 579, 1928.

8. Lewis, K. M.: Report of Case of Severe Head Tetanus with Recovery, J. A. M. A. 74: 489 (Feb. 14) 1920.

9. Gray, C. M.: Head Tetanus with Facial Paralysis: Case Report and Resume of Methods of Treatment, J. Missouri M. A. 21: 137, 1934.

10. Watkins, A. L.: Facial Paralysis in Cephalic Tetanus, Arch. Neurol. & Psychiat. 41: 788 (April) 1939.

11. Irvin, E. H.: Head Tetanus, Bull. El Paso County M. Soc. 7: 10, 1915.

12. Bishop, J. M.; Du Bosc, R. H., and Hamlin, F. E.: Orogenous Tetanus, J. A. M. A. 98: 1546 (April 30) 1932.

case of otogenous cephalic tetanus and Hyman¹³ a case which followed tonsillectomy. The number of cases is not great enough to justify a statistical analysis.

REPORT OF CASE

First Admission.—H. W., a white man aged 28, a farmer, was admitted to the Charity Hospital on May 18, 1940. Six days before admission he had been standing in his barnyard knocking mulberries out of a tree with a stick; the stick fell back and struck his face, causing what appeared to be two small abrasions on the right cheek. Two days later the injured site became painful, red and swollen. Hot compresses were applied, and pus was expressed in small amounts daily thereafter.

The temperature was 100.2 F., the pulse rate 92 a minute, the respiratory rate 20 a minute and the blood pressure 135 mm. of mercury systolic and 85 mm. diastolic. The patient was tall, well developed and well nourished and did not appear acutely ill. There was an intensely red, warm, indurated swelling of the right cheek, about 4 cm. in diameter. An area 1.5 cm. in diameter, in the center of the lesion was fluctuant. Removal of a small crust allowed about 2 cc. of thick yellow pus to escape. The superficial and deep reflexes were normal. The blood showed hemoglobin 80 per cent (Tallqvist), red blood cells 5,000,000 and white blood cells 8,000 with a normal differential count. A Kline test of the blood gave negative results.

The patient was treated continuously with hot compresses of physiologic solution of sodium chloride applied to the right cheek. A small rubber dam was inserted into the lesion for twenty-four hours. Although moderate amounts of pus continued to drain from the abscess, the cellulitis subsided in three days and the patient was discharged from the hospital. He did not receive tetanus antitoxin.

Second Admission.—The patient returned to the outpatient clinic on May 27, fifteen days after the injury, and was readmitted to the hospital. He complained that pain in the lower part of the back, of two days' duration, was exaggerated by walking and by movements of the trunk. At home he had applied hot saline compresses to the right cheek, but pus, although thinner, had continued to drain from the wound. Gradually, in the period of the three days preceding his second admission, he had become unable to open his mouth, move the muscles of the right side of his face or close his right eye.

The rectal temperature was 101 F. and the pulse rate 106. The patient appeared acutely ill. His face was flushed and he was perspiring freely. He was easily startled but was mentally alert and cooperative. There was complete peripheral paralysis of the right facial nerve. He was unable to whistle, elevate the right eyebrow or show his teeth on the right side. The right eyelid could not be closed. Movements of the left side of the face were intact. He was able to open the mouth a distance of about 2 cm. on the left side, but movement of the right jaw was more restricted. The abscess of the right cheek was surrounded by an area of induration about 2.5 cm. in diameter. Thin yellow pus could be expressed from the central opening. Inspection with a small probe revealed a narrow cavity extending downward and to the right a distance of approximately 2 cm. There was some stiffness of the neck. The chin could be flexed passively on the chest with the production of great pain. There was slight spasticity of the abdominal and back muscles. The arms and legs were relaxed with difficulty, and the patient moved them in an unsteady, jerky fashion. The deep reflexes of the Achilles and patellar tendons were hyperactive. There was a slight increase of the left knee jerk over the right one. Sustained ankle and patellar clonus was present. A spinal puncture revealed normal conditions. The white blood count was 9,750, with 80 per cent polymorphonuclear leukocytes.

The diagnosis of tetanus was suggested by trismus, hyperactive reflexes and muscular spasticity. These signs became exaggerated the day following admission with the onset of

attacks of severe generalized pain in the back, lasting one to two minutes, at which times the patient's body became opisthotonic with rigid extremities and a boardlike abdomen. No difficulty in swallowing was experienced. These attacks were precipitated by slight stimuli such as unexpected questioning or movement of the bed.

The local lesion was treated with daily applications of zinc peroxide paste, but repeated cultures of pus from the abscess demonstrated the presence of *Staphylococcus pyogenes albus*, *Clostridium welchii* and *Escherichia coli*. On May 31 the abscess pocket was incised, and a splinter of wood about 1.25 cm. in length was found embedded deep in the tissues. *Clostridium tetani* was cultured from this. Tetanus antitoxin was administered as follows: On May 28, 60,000 units was given intravenously and 40,000 units subcutaneously, on May 30, 100,000 units intramuscularly, on May 31, 60,000 units subcutaneously, on June 2, 60,000 units subcutaneously and on June 4, 100,000 units intramuscularly, a total of 420,000 units in a period of eight days. Each dose of antitoxin was followed on the next day by temporary diminution of the tetanic symptoms, but it was deemed wise to discontinue its use on June 3 because of the appearance of urticaria on the arms and the upper part of the chest. Avertin with amylene hydrate was administered rectally as needed, this being the only means of obtaining complete relaxation and sleep.

Early on the morning of June 6, the rectal temperature was 105.4 F., the respiratory rate was 36 and respirations were shallow; the pulse rate was 150 and the blood pressure 150 systolic and 60 diastolic. There was an occasional dry cough, but no signs of consolidation were elicited in the chest. Two days later, reexamination of the chest revealed bronchial breathing and a few fine rales at the base of the right lung. A diagnosis of bronchopneumonia at the base of the right lung was confirmed by a roentgenogram. Pneumococci were not found in the sputum. The white blood cell count was 12,450 with 86 per cent polymorphonuclear cells. Therapy with sulfapyridine was started on June 8 with an intravenous dose of the sodium monohydrate and was continued by mouth for eight days thereafter, until the temperature reached normal. The concentration of sulfapyridine in the blood on June 10 was 8.4 mg. per hundred cubic centimeters, and on June 11 it was 10.5 mg. The signs and symptoms of pneumonia and tetanus began to subside gradually, the decline coinciding with the administration of sulfapyridine. On June 12 the patient was able to move his neck and extremities with ease, although the abdomen was still spastic. He continued to have occasional mild convulsive seizures until June 13. Diminution of the trismus and slight improvement of the paralysis of the facial nerve were first noted on June 16. Neurologic examination just before his dismissal on June 24, forty-three days after the accident, revealed somewhat hyperactive tendon reflexes and slight spasticity of the abdominal muscles. There was no stiffness of the neck. The clonus of the ankle and patella had entirely disappeared. The patient could open his mouth about 3 cm. and could wrinkle the forehead and elevate the eyebrows, although there was a definite weakness of the facial muscles on the right side. The right eye could be closed, and blinking was present in it but not complete. The abscess of the face was healing rapidly. The patient was last seen in his home on August 28 by one of us and had completely recovered.

COMMENT

We add the thirteenth case of cephalic tetanus accompanied with paralysis of the facial nerve to the American literature. This type of tetanus is either rare or has not been recognized in this country. In the differential diagnosis of this case, tetanus might have been overlooked if generalized symptoms had not ensued. Tetanus should be kept in mind whenever there is paralysis of the facial nerve following a facial injury, especially when it is accompanied by trismus, for paralysis of the facial nerve may be the first symptom of early cephalic or generalized tetanus. The possibility of the presence of a foreign body in any wound should not be overlooked.

13. Hyman, S.: Head Tetanus Following Tonsillectomy with Subsequent Recovery. *Am. J. Dis. Child.* 49: 1540 (June) 1935.

Our patient's condition was grave, and he showed no decisive improvement until a relatively high level of sulfapyridine was obtained in the blood stream. The drug was administered because of bronchopneumonia but may have had a favorable influence on the course of the tetanus. The work of Mayer¹⁴ gives us some basis for this belief. This author administered sulfanilamide and sulfapyridine to a small series of mice and apparently demonstrated in them a high degree of protection against tetanus. He administered the drugs by mouth, beginning immediately after subcutaneous injections of tetanus bacilli and spores.

1430 Tulane Avenue

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

THEODORE G KLUMPP, M.D., Secretary

NOMENCLATURE OF NONCRYSTALLINE ESTROGENIC PREPARATIONS

The Committee on Nomenclature of the Council on Pharmacy and Chemistry has been considering for some time the adoption of an official term to signify preparations containing estrogenic substances which are not in a pure chemical state. The need for such a nomenclature is obvious since the market contains numerous preparations of noncrystalline estrogens, and the multiplicity of proprietary terms for such products has been quite confusing to physicians. The rectification of this confusion is essential for discriminating between the crystalline and the noncrystalline preparations. The Council therefore adopted the following terms to signify noncrystalline estrogenic substances which contain principally estrone together with other estrogenic substances obtained in the extraction process: Solution of Estrogens or Solution of Estrogenic Substances. If the preparation is in a form other than solution, the appropriate term may be substituted for "Solution," such as Suppositories of Estrogens or Estrogenic Substances, Tablets of Estrogens, and so on.

The Council will require that such preparations be designated by either of these names for inclusion in New and Nonofficial Remedies. Also it will be necessary to state beneath the title the source of the preparation, such as whether it is from pregnant human urine, pregnant mares urine or placenta, and the predominant estrogenic substances.

The Council has already accepted such a noncrystalline preparation, namely Amniotin (Squibb). The Council has recognized this firm's right to Amniotin as a proprietary term.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

THEODORE G KLUMPP, M.D., Secretary.

EPINEPHRINE-U. S. P. (See New and Nonofficial Remedies, 1941, p 252).

Suprarenalin (Armour) (See New and Nonofficial Remedies, 1941, p 253).

The following dosage form has been accepted:

Suprarenalin Solution 1,000 in 5 cc vials (for hypodermic use). Contains suprarenalin (epinephrine) as hydrochloride 0.10 per cent, chlorobutanol (chloroform or chloral derivative) 0.50 per cent, sodium bisulfite (not more than) 0.10 per cent, physiological salt solution q s.

DIGITALIS (See New and Nonofficial Remedies, 1941, p 204).

The Wm. S. Merrell Company, Cincinnati.

Digitalis Tablets, 1½ grains Merrell—Each tablet is equivalent to 1 U. S. P. unit.

¹⁴ Mayer, R. L. Action of Sulfanilamide and Sulfapyridine on Tetanus Bacilli and Toxin, *Compt. rend. Soc. de biol.* 130: 1560, 1939

THEOPHYLLINE WITH ETHYLENEDIAMINE (See New and Nonofficial Remedies, 1941, p 583).

The following dosage forms have been accepted:

Ampules of Aminophylline, 2 cc, 0.48 Gm (7½ grains). Each ampule contains aminophylline 0.48 Gm and benzyl alcohol 0.04 cc in sufficient distilled water to make 2 cc.

Prepared by the Lakeside Laboratories, Inc., Milwaukee.

Ampules of Aminophylline, 10 cc, 0.24 Gm (3¾ grains). Each ampule contains aminophylline 0.24 Gm in sufficient distilled water to make 10 cc.

Prepared by the Lakeside Laboratories, Inc., Milwaukee.

Tablets of Aminophylline, 0.1 Gm (1½ grains).

Prepared by the Lakeside Laboratories, Inc., Milwaukee.

ASCORBIC ACID (See New and Nonofficial Remedies, 1941, p 557).

The following dosage forms have been accepted:

Tablets Ascorbic Acid Breon, 100 mg.

Prepared by George A. Breon & Co., Inc., Kansas City, Mo.

Tablets Ascorbic Acid-Breon, 25 mg.

Prepared by George A. Breon & Co., Inc., Kansas City, Mo.

Ascorbic Acid Tablets Stearns, 50 mg.

Prepared by Frederick Stearns & Company, Detroit.

Ascorbic Acid Tablets Stearns, 100 mg.

Prepared by Frederick Stearns & Company, Detroit.

MERCURY OXYCYANIDE (See New and Nonofficial Remedies, 1941, p 348).

The following dosage forms have been accepted:

Ampules of Mercury Oxycyanide 0.008 Gm (¼ grain), 5 cc. Each 5 cc contains 0.008 Gm mercuric oxycyanide N. N. R. dissolved in distilled water.

Prepared by the Lakeside Laboratories, Inc., Milwaukee.

Ampules of Mercury Oxycyanide 0.011 Gm (¼ grain), 5 cc. Each 5 cc contains 0.011 Gm mercuric oxycyanide N. N. R. dissolved in distilled water.

Prepared by the Lakeside Laboratories, Inc., Milwaukee.

PONTOCAINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1941, p 77).

The following dosage form has been accepted:

Pontocaine Base Eye Ointment. An ointment containing 0.5 per cent of pontocaine base, the free base of pontocaine hydrochloride, dissolved in white petrolatum.

Prepared by the Winthrop Chemical Co., New York.

SULFANILAMIDE-NATIONAL DRUG CO. (See New and Nonofficial Remedies, 1941, p 508).

The following additional dosage forms have been accepted:

Sulfanilamide National Drug Co., Tablets, 1 grain.

Sulfanilamide-National Drug Co., Tablets, 7½ grains.

SULFATHIAZOLE (See New and Nonofficial Remedies, 1941, p 519).

Sulfathiazole-Lilly.—A brand of sulfathiazole-N. N. R.

Manufactured by Eli Lilly and Company, Indianapolis. U. S. patent applied for. No U. S. trademark.

Tablets Sulfathiazole Lilly, 0.25 Gm (3¾ grains).

Tablets Sulfathiazole Lilly, 0.5 Gm (7½ grains).

LUNOSOL (See New and Nonofficial Remedies, 1941, p 497).

The following additional dosage form has been accepted:

Liquid Lunasol—An aqueous solution containing 100 Gm of lunosol in each hundred cubic centimeters. One cc of liquid lunosol is equivalent in silver chloride content to 1 Gm of lunosol.

This concentrated aqueous solution of lunosol is marketed in ½ and 2 ounce dropper bottles, accompanied by an empty dilution bottle, thus affording a convenient means of preparing the various dilutions which may be indicated, also in 1 ounce and 4 ounce bottles for dispensing.

SUSPENSION OF EPINEPHRINE IN OIL 1:500-N. N. R. (See New and Nonofficial Remedies, 1941, p 255).

EPINEPHRINE IN OIL 1:500-ENDO—A brand of suspension of epinephrine in oil 1:500-N. N. R.

Manufactured by Endo Products, Inc., Richmond Hill, N. Y. No U. S. patent or trademark.

Ampoules Epinephrine in Oil 1:500 Endo, 1 cc.—A suspension of 2 mg of epinephrine base in 1 cc. of peanut oil.

PROCAINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1941, p 80).

The following dosage form has been accepted:

Hypasol Solution Procaine Hydrochloride 2%, 2 cc. Ampoules containing 0.04 Gm of procaine hydrochloride dissolved in sufficient physiological solution of sodium chloride to make 2 cc.

Prepared by The Drug Products Co., Inc., Long Island City, New York.

MEDICAL EDUCATION IN THE UNITED STATES AND CANADA

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THE MILITARY EMERGENCY AND THE MEDICAL PROFESSION A Statement by Major General James C. Magee, Surgeon General, U. S. Army

In the present military emergency, the Medical Department of the Army must look for the greatly increased numbers of medical, dental and veterinary officers required for military service to the professions as established and practicing in civil life. That this fact has impressed itself with full force on the minds of the civilian members of the professions is attested by the many inquiries, proffers of service and suggestions directed toward a solution of the problems involved coming from all sections of the nation.

The magnitude of the military effort demands the separation of thousands of practitioners from their accustomed occupations, and the same holds true of those who are engaged solely in administrative and instructional lines of endeavor. It is patent, in view of the administrative policies now applicable to the procurement of officer personnel whereby the choice of individuals for service is almost entirely restricted to those at present holding Reserve commissions, that certain dislocations will take place in communities and organizations that will be regarded as, and in fact will be, hardships to those concerned. A broadened base from which to draw officers for duty would of course serve to ameliorate the situation.

In the present emergency it is difficult to be specific as to the manner in which medical schools may best serve military interests. Within recent weeks the War Department liberalized its policy in reference to the deferment of military service for medical students by granting authority to commission members of the junior and senior classes in the Medical Administrative Corps, so placing them under the control of the Surgeon General. Students accepting such commissions can be held in deferment; on graduation they can be commissioned in the Medical Corps Reserve and, on completion of one year's internship, ordered to active duty in their capacity as physicians. While this arrangement is not ideal it is

helpful and, if the principle is rigidly followed, should serve to make available a large group of young physicians each year who can be best spared from civil life, so leaving in their communities a like number of more necessary and more perfectly established older men. In this respect medical schools can be very helpful by urging their students to seek commissions in the Medical Administrative Corps when eligible.

Because many members of medical school staffs hold Reserve commissions, some of them will be sought for military service. It is not the desire of the Surgeon General to disrupt any essential established institution or program by the withdrawal of key personnel and, whenever conditions will permit, deferment will be granted such persons. However, if this policy is to become applicable to any effective degree, it becomes incumbent on the administrative heads of such institutions to consider carefully their lists of personnel, evaluate each individual's qualifications in reference to the needs of the institution and of the Army, and request deferment only for those who are in fact essential staff members whose separation would entail real hardship.

Many medical schools have generously offered the use of their facilities for the advanced training of officer personnel and for the training of enlisted technicians. A splendid field, susceptible of development to the great good of the Medical Department, is here available should our necessity become so acute as to warrant acceptance of these proposals. At present, however, the organization and operation of the department are such that it is not practicable to adopt these methods and we must look on the medical schools, in this respect, as a reserve to be made available when needed.

One great contribution to the medical effort is being made that deserves comment. It is to be found in the splendid work being done by members of various advisory boards and committees now engaged in military

medical activities in liaison with the Surgeon General. These gentlemen are in most instances connected with our great medical teaching institutions and in that capacity bring to their tasks not only their own high talents but the names and prestige of their schools as well. This in itself is a great support and aid to the Army Medical Department.

It is impossible to foresee at present the ultimate demands to be made on the several professions engaged

in the healing arts in our country nor is it possible now to prophesy what changes in procedure may become necessary in reference to the employment of professional personnel, but it is certain that the medical schools of the nation will continue in the very first rank of those agencies engaged in the preservation of the American medical tradition through complete support to the military forces.

August 12, 1941.

FORTY-FIRST ANNUAL PRESENTATION OF EDUCATIONAL DATA BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

A summary, statistical and editorial, of the educational activities of the Council on Medical Education and Hospitals is presented annually in the Educational Number of *THE JOURNAL*. In the following pages will be found the report for the academic year 1940-1941, the usual review of preliminary and undergraduate education, a description of the approved medical schools of the United States and Canada, revised lists of hospitals approved for the training of interns and for residencies and fellowships in the specialties, and an audit of what is being done, and by whom, throughout the various states to extend opportunities for the advanced education and continued training of practicing physicians. In this section is a descriptive account of numerous clinical societies and educational organizations engaged in all types of graduate and postgraduate medical education. The major national defense regulations, as far as they affect medical education and medical students, are reproduced in a readily accessible form. Finally are included the official requirements of each of the fifteen approved examining boards in medical specialties, together with figures showing the numbers certified to date.

The Educational Number of *THE JOURNAL* has proved to be an indispensable source of information for students, interns, residents and practicing physicians and those interested in specialty certification. It interests also presidents of universities maintaining medical schools, the deans and other officials of medical schools, licensing agencies, the directors and staffs of hospitals, and the various general and special societies interested in the promotion of graduate and postgraduate medical education. It is in frequent demand by governmental agencies. In addition to the circulation of *THE JOURNAL*, almost two thousand reprints of the entire study are distributed, and an equal number of separate reprints of the lists of hospitals.

All these data are based on current official reports. Acknowledgment is tendered the officers of the institutions mentioned and others for their ready cooperation in supplying the material presented herewith and for other records furnished throughout the year to the office of the Council and the members of its staff on inspection or visitation, enabling the Council to maintain its medical student and hospital registers efficiently and to carry on its activities as outlined by the House of Delegates of the American Medical Association.

DEFENSE ACTIVITIES

Leaders in education acknowledge the paramount importance of national defense. National defense, however, includes not only military preparedness but also the preservation and development of all institutions necessary for the safety and welfare of the people. An effective program of national defense, therefore, demands that educational institutions which provide a

continuous supply of men skilled in professions, notably in medicine, be maintained unimpaired. To this end the Council on Medical Education and Hospitals has been frequently in conference with the medical services of the army and navy. Through its Committee on Medical Preparedness, the American Medical Association has rendered and continues to render every possible assistance.

Medical Schools.—The faculties of medical schools have been classified with respect to availability for medical service in national defense. An alphabetical list of essential faculty members was supplied the Surgeon General of the United States and the commanding officer of each corps area in the fall of 1940 and was subsequently revised as occasion required. In the majority of cases reserve officers who occupy essential positions on the faculties of medical schools have been deferred for a reasonable time until a replacement can be secured or until a teaching assignment has been completed. It has been suggested by the office of the Surgeon General that, in order to maintain uninterruptedly the instruction of medical students, those members of medical faculties who are essential should not at the same time hold commissions in the Reserve Corps and, more especially, should not be assigned to affiliated hospital units. The War Department expects that when an affiliated unit is called to active service every officer should be able to go, as there has been time to arrange for others to take over his civilian responsibilities.

At a meeting of the executive council of the Association of American Medical Colleges, held in Chicago, May 30, 1941, three recommendations were made and submitted to member colleges of the association and to the Council on Medical Education and Hospitals. These were:

The Executive Council recommends that those schools which can do so, without lowering standards of medical education, increase the enrolment of the 1941 entering class by 10 per cent in order to help meet the medical needs of the present national emergency.

The Executive Council recommends that the Association urge every medical college which can do so, without lowering standards of medical education, to continue the required medical training of the fourth year during the summer of 1941 in order to graduate at an earlier date as many students as possible.

The Executive Council recommends that the Association make a study of the need for and the possibility of revising the schedule of instruction in medical colleges with a view to accelerating the output of graduates during the national emergency without any lowering of standards of medical education.

The Council on Medical Education and Hospitals expressed the opinion that, as some schools have for many years operated on the quarter plan, formal action

approving this procedure was not needed at present. In the absence of any definite information from the War Department as to the necessity for increasing enrolments or accelerating the output of medical graduates, the Council took no action on any of these matters.

Forty-four medical schools have increased the enrolment of the 1941 entering class by a total of 329 students. It is anticipated that the sophomore enrolment will be increased 40, juniors 131 and seniors 79. Eleven schools have made it possible for students to anticipate, during the current summer, a part of the required work of the fourth year. In three of these schools the program is required. Classes will be graduated in February or March by eight schools. Three schools will allow seniors to finish their work two months earlier and begin their internship or other work at that time, but they will graduate with the regular class in June. Two schools are planning to operate on the four quarter plan.

The medical curriculum has not thus far been curtailed, although the total time involved has been shortened by cutting down vacations. Additional courses in military medicine are being offered. The medical schools, apparently, are able to proceed without extensive revision of the curriculum and without shortening the period of residence. An accelerated program is not possible in many institutions for various reasons, including the fact that their teaching force has been reduced for military reasons. Others would consider such a program if completion of the course could be integrated with hospital internships. The financial aspect is an important consideration both for students and for schools.

Medical Students.—In the Selective Service Act of 1940 there was no provision for the exemption or deferment of medical students as such. Like all other students, they were placed in class I-D which granted them deferment until approximately July 1, 1941. On May 4, 1941 deferment from military training of individual medical students was recommended by Brig. Gen. Lewis B. Hershey, deputy director of Selective Service. But the actual decision, under the law, rests with the local boards. The release from the national headquarters of the Selective Service System reads as follows:

FOR RELEASE: SUNDAY, MAY 4, 1941

Moving promptly to meet a "growing national shortage of physicians and surgeons," reported by the Office of Production Management, a policy of deferment from military training of individual medical students "who give reasonable promise of becoming acceptable medical doctors" was proclaimed today by Brig. Gen. Lewis B. Hershey, deputy director of Selective Service. These deferments should be continued in each individual case so long as the student is progressing satisfactorily, he said.

General Hershey's memorandum, which summarizes the report of the OPM, was sent to all State Selective Service Directors for communication to their local boards. It stresses the OPM statement that the shortage of physicians and surgeons affects both the nation's armed forces and the civilian population and that the utmost care must be exercised to meet both needs.

Local boards are urged to see that, while no practicing doctor whose services are necessary to his community is called for military service, the requirements of the armed forces for physicians and surgeons also are filled. It also is stressed that where doctors, including interns, are eligible for military service they should be encouraged to apply for Medical Reserve Corps commissions, but that they will be inducted if they are placed in class I-A and fail to take advantage of the opportunity to be commissioned. In the case of interns, it was pointed out that, if commissioned, they will be permitted by the War Department to complete one year's internship.

Summarizing the OPM report on its study of the situation, General Hershey pointed out that it indicates a present need of around 9,000 medical officers for the Army, Navy, Public Health Service and Veterans Administration in addition to present staffs. This approximates a reduction of about 5 per cent in the number of doctors now available for service in civilian life, and it is estimated that the further demand caused by health problems in communities expanded by new defense industries will increase this civilian need to about 10 per cent.

In addition to the 9,000 additional medical officers required by the Army, Navy and other agencies, General Hershey said the OPM report showed a probable annual turnover of around 3,500 because of retirement of Regular Medical Officers and the expiration of tours of duty of Reserve Medical Officers.

The OPM report estimates that there are 155,000 practicing physicians in the United States, of whom about 27,000 are 65 years of age or older, and the mortality is around 3,800 a year. Their places can be filled only by medical graduates who enter the profession each year and their number is estimated at approximately 8,000, of whom only 60 to 65 per cent probably would be qualified physically or otherwise for military service.

Commenting on this situation in announcing the Selective Service policy of deferring medical students who are making satisfactory progress in their professional training, General Hershey's memorandum to state directors stated:

"There are no replacements for medical students who are withdrawn from school. Consequently if the supply of medical students who are to be graduated into the medical profession is reduced through their induction to serve in a nonprofessional capacity, an increasing reduction of physicians available for military service as well as an aggravation of the increasing overall national shortage will result."

As an outline of policy and procedure for the Selective Service System concerning medical students, General Hershey quoted the OPM report:

"It is of paramount importance that the supply be not only maintained but encouraged to grow, and that no student or intern who gives reasonable promise of becoming an acceptable medical doctor be called to military service before attaining that status."

Local boards were cautioned, however, that a deferment is not an exemption and that the obligation and liability for military service remain on its expiration.

General Hershey's memorandum also called attention to a previous one issued on April 22 prescribing procedure for deferment of individual students in a number of specialized professional fields which were suggested by the Office of Production Management. This memorandum suggested procedure for presenting local boards with detailed facts concerning individual students which was prepared by the American Council of Education and concurred in by National Headquarters of the Selective Service System. As set forth in a bulletin (No. 10) issued by the Council, this provides for getting into the hands of the local board of a "Student Statement of Information" concerning his status and plans and an affidavit by his college or university in which the college officials testify as to his standing, courses and occupational objectives, together with a general evaluation of the student as a "necessary man" for occupational deferment.

By recent amendment of paragraphs 352 and 353 of the Selective Service Regulations a new class has been introduced; namely, class II-B, which assures the student deferment as long as his status remains unchanged.

Amendment No. 59, effective June 5, 1941, amends Volume Three, section XVIII, paragraphs 352 and 353 of the Selective Service Act of 1940, to read as follows:

352. *b.* In class II-B shall be placed any registrant found to be a "necessary man" in any industry, business, employment, agricultural pursuit, governmental service or any other service or endeavor, or in training or preparation therefor, the maintenance of which is essential to the national health, safety or interest in the sense that a serious interruption or delay in such activity is likely to impede the national defense program.

353. *b.* Class II-B deferments shall not be limited as to the period during which they shall be effective. The case of a registrant classified as class II-B may be reopened and his classification considered anew in the same manner and for the same reasons as any other classification.

The House of Delegates of the American Medical Association after a joint conference of the Committee on Medical Preparedness of the American Medical Association and the Council on Medical Education and Hospitals, held June 2, 1941, urged the War Department to provide for all medical students in approved medical schools and for premedical students some form of military status which will make clear the fact that, in preparing themselves to become physicians for the services of the country, these students are already actually giving an essential service under the preparedness program and are not seeking to evade, escape or defer their responsibilities.

On May 26, 1941 authority was granted for the commissioning as second lieutenants in the Medical Administrative Corps Reserve, after July 1, 1941, male junior and senior medical students in approved medical schools who are fit for military service; also for commissioning interns as first lieutenants, Medical Corps Reserve, with the understanding that they will be ordered to one year's active duty immediately on completion of their internship. The text of the communication of the Adjutant General reads:

SUBJECT: Deferment of Medical Students.

TO: All Corps Area and Department Commanders, and The Surgeon General.

1. Authority is granted for the commissioning as second lieutenants in the Medical Administrative Corps Reserve, after July 1, 1941, male junior and senior medical students in grade A medical schools in the United States who are fit for military service; also for commissioning interns as first lieutenants, Medical Corps Reserve, with the understanding that they will be ordered to one year's active duty immediately on completion of their internship.

2. Appropriate publicity will be given the above authority by the Corps Area and Department Commanders. Students and interns who are properly qualified will be invited to submit applications for appointment, final approval in each case to be made by the War Department.

By order of the Secretary of War:

E. A. ADAMS,
Major General,
The Adjutant General.

On June 18, 1941 these orders were further amplified by authority to transfer officers so appointed to the War Department Reserve Pool and retained therein until eligible for appointment in the Medical Corps Reserve. The letter from the War Department outlining the procedure to be followed in applying for commissions has been forwarded to the dean of every medical school. The letter is as follows:

SUBJECT: Appointment of Medical Students in the Medical Administrative Corps Reserve.

TO: All Corps Areas, Department Commanders, and The Surgeon General.

1. The letter of this office of May 26, 1941 (AG 210.1 Med-Res. 5-1-41 RB-A) Subject: Deferment of Medical Students, is rescinded, and this letter is substituted therefor.

2. Authority is granted to Corps Area Commanders to waive the provisions of paragraph 5, Army Regulations 140-33, for the appointment in the lowest grade in the Medical Administrative Corps Reserve, after July 1, 1941, of physically qualified male citizens who are bona fide matriculants at approved medical

schools within the United States and who have successfully completed the first two years of their medical education. Officers so appointed will be transferred to the War Department Reserve Pool and retained therein until eligible for appointment in the Medical Corps Reserve, or for action under paragraph 3 (c) below.

3. (a) Appointment will be made without reference to an examining board as prescribed in paragraph 20 c, AR 140-5, and without reference to the peacetime procurement objective for the Medical Administrative Corps Reserve.

(b) Applications, accompanied by report of physical examination, will be forwarded by the dean of the medical school to the commanding general of the corps area in which the school is located, together with a certified statement that the applicant has successfully completed the freshman and sophomore years of medical instruction and is an accredited matriculant in the junior or senior class in medicine at the institution. The certificate will state the prospective date of completion of the prescribed four year course of medical instruction.

(c) Officers of the Medical Administrative Corps Reserve appointed under the provisions of this letter and transferred to the War Department Reserve Pool will be discharged from the Officers' Reserve Corps for the convenience of the government, under the following circumstances:

1. Discontinuance of medical education.
2. Matriculation in an unapproved school of medicine.
3. Failure to complete successfully the prescribed four year course of medical instruction.
4. Failure to secure appointment in the Medical Corps Reserve within one year of the completion of the prescribed four year course of medical instruction.

(d) The Surgeon General will maintain adequate records to assure timely application for appointment in the Medical Corps Reserve and transfer from the War Department Reserve Pool, and to assure discharge as provided above.

4. Transfer to the Medical Administrative Corps Reserve of Reserve officers of other branches who are studying medicine, dentistry and veterinary medicine as authorized in AG letters dated April 17 and Aug. 28, 1940, Subject: Special Mobilization Procedures for Procurement of Medical Department Reserve Officers who are Students in Approved Medical Schools (AG 210.31 ORC 10-24-39 R-A) will continue as now authorized. Such transfer may be effected prior to actual matriculation provided the applicant has been accepted for enrolment by an approved school.

5. Appropriate publicity will be given the above authority by Corps Area Commanders, Department Commanders and the Surgeon General. Properly qualified students will be invited to submit application for appointment, final approval in each case to be made by the War Department.

By order of the Secretary of War:

E. A. ADAMS,
Major General,
The Adjutant General.

It would appear that every effort is being made by medical educators to cooperate in the national emergency while at the same time endeavoring to insure that the education of physicians is continued at the present level and without interruption. It should not be necessary to argue that a continuing and undiminished supply of well trained physicians is absolutely essential to the welfare of the nation. We cannot speed up that training beyond a certain point without lowering educational standards and degrading the quality of medical service. The present crisis demands, in fact, better qualified physicians if we are to face the future with reasonable confidence. Those who represent the medical schools are making every effort to preserve their institutions and to maintain, unimpaired, their priceless contribution to the health and welfare of the nation.

DEVELOPMENTS IN MEDICAL EDUCATION

The objective of medical education, it is customarily assumed, is the development of the best practitioners of medicine. Integrity, intelligence, industry, judgment and skill in the use of the scientific method are recognized as necessary traits of the successful medical student, to whose growth and development the school of medicine may largely contribute. The leading schools strive to bring out the best that is in each student by making him largely responsible for his own education.

Students applying for admission to medical schools are selected on the basis of the qualities enumerated, so far as they can be evaluated, and on evidence of capacity for intellectual growth, self reliance and maturity, all of which have little relationship to age or subjects taken. The subjects in which every medical student needs basic knowledge are English, physics, chemistry and biology. They provide him with a means of expression and a foundation for further study in the medical sciences. The Council's minimum requirement for admission to medical schools since 1918 has been two years of college work, including courses in English, and theoretical and practical courses in physics, biology and general and organic chemistry. Since 1939, three years of college study has been recommended for entrance into medical school. At that time 3.8 per cent of all students were admitted to nineteen schools with the minimum of two years. For the session 1940-1941 only eighty-three students, 1.4 per cent, were accepted by nine schools.

One of the striking chapters in the history of education deals with the part played by the American Medical Association, through its Council on Medical Education and Hospitals, in raising the standards of medical education in the United States. Instead of the poorest medical schools in the world, we now have the best. If the public had had to wait until a popular majority interested itself in providing good medical schools, we should have few of these schools today. It was the understanding of the physician together with his willingness to take responsibility and to contribute of his time and means that has made possible the unparalleled transformation of the last thirty years in the field of medical education. There has been a steady improvement in medical schools, in hospitals and, above all, in the competence of the young physicians who are entering practice.

During the academic years 1934-1936 a resurvey was made of all medical schools in the United States and Canada. The Council received the assistance and cooperation of the Association of American Medical Colleges and of the Federation of State Medical Boards of the United States. Representatives of the Council, in company with a representative of the college association or of the medical boards, visited eighty-nine schools in the United States and Canada. The results of this study were published early in 1940¹ and contained an analysis of a vast amount of data supplied voluntarily by the schools. Although there were wide variations in the excellence of the schools visited, even the weakest of them was a stable and reputable institution as compared with the proprietary schools and diploma mills which existed before the Council on Medical Education and Hospitals began its investigations. The Council therefore refrained from publishing an individual analysis and criticism of each school but instead described

in general terms the organization and administration, faculty and student personnel, and the clinical and financial resources of the schools, endeavoring to present an objective picture of medical education in this country for the years under review. However, to each school was sent a confidential report, showing graphically how it compared with the other recognized schools. By this analysis immediately many weaker schools were stimulated to bring themselves up to a higher standard. To some, even of the leading schools, it revealed deficiencies that had gone unnoticed. Universities have evinced greater interest in their medical departments, attempts have been made to develop new hospital relationships, and faculties of medicine have manifested more intense and personal interest in the improvement of their institutions.

Since the first classification of medical schools and the publication of the Carnegie report, probably no period has witnessed such activity and progress in the field of medical education as the last six years.

TABLE 1.—Improvements in Medical Schools in the United States, 1940-1941

Budgets	10 schools increased annual budgets from \$5,000 to 33 per cent
Selection of students	Students selected more carefully, entrance requirements raised, higher scholastic standards adopted
Instructors	Additional instructors added in both laboratory and clinical divisions
Preclinical facilities .	New laboratory building opened or ambitious building programs under way by four schools
Clinical facilities....	New hospital building erected, wings added or buildings remodeled, affiliations reported, increase in beds allotted to teaching, better control of hospital facilities and better working arrangements reported by eight schools
Curriculum	Curriculum of junior and senior years extended through summer months to take full advantage of available clinical material reported by four schools
Library	The libraries of three schools have been improved by the addition of a new building, purchase of additional books and periodicals or a grant
Other facilities....	(a) Orientation of laboratory work with the main branches of clinical work by two schools (b) Two schools report that teaching facilities in the field of psychiatry have been strengthened

A number of other innovations have been added designed to increase the practical value of the medical school training.

Summing up the reports of activities of the medical schools during the academic year 1940-1941, it is gratifying to outline the substantial improvements presented in table 1.

Medical schools now face an entirely new set of conditions. In the existing emergency, various pressure groups threaten to destroy or seriously impair the achievements of the last generation. At the same time, in the defense program, 617 instructors, chiefly Medical Reserve Officers, have gone to the colors. Their duties have been assumed, in many cases, by men of less experience. In many instances hospitals and medical schools have been cooperating actively with local, appeal, medical advisory and induction boards of the Selective Service by making available their facilities, resources and personnel. Many schools have organized hospital units. In the midst of all these activities every effort must be made to maintain our present standards in the training of physicians so that the health of our people shall not suffer.

PRELIMINARY EDUCATION

Since 1915 the Council on Medical Education and Hospitals of the American Medical Association has published a list of approved colleges of arts and sciences

(Continued on page 688)

1. Weiskotten, H. G., Schwitzalla, A. M., Cutter, W. D., and Anderson, H. H. Medical Education in the United States, 1934-1939, Chicago, American Medical Association, 1940

TABLE 2.—Recognized Medical Schools in the United States and Canada

Name and Location of School	1941-1942 Preliminary Requirements	Students by Classes, Sessions 1940-1941					5th Year or Intern Year	Totals	Graduates Since July 1, 1910	Applications for Admission to the 1st Year Will be Received Until	Executive Officer
		1st Year	2d Year	3d Year	4th Year						
ARKANSAS											
1 University of Arkansas School of Medicine, Little Rock.....	2	82	68	66	70	..	286	70	Aug.	Byron L. Robinson, M.D., Dean.....	1
CALIFORNIA											
2 University of California Medical School, Berkeley-San Francisco.....	3	62	59	59	59	52†	229	52	Jan.	President Robert G. Sprunt, LL.D., Acting Dean.....	2
3 College of Medical Experimentals, Iona Linda-Los Angeles.....	3	75	64	82	77	90†	298	91	Jan.	E. H. Risley, M.D., Dean, Iona Linda; W. E. Muephler-son, M.D., Assoc. Dean, Los Angeles.....	3
4 University of Southern California School of Medicine, Los Angeles.....	3	55	51	46	49	40†	201	49	March	Paul S. McKelben, Ph.D., Dean.....	4
5 Stanford University School of Medicine, Stanford University-San Francisco.....	3	62	61	59	53	60†	216	61	.....	Loren Roscoe Chandler, M.D., Dean.....	5
COLORADO											
6 University of Colorado School of Medicine, Denver.....	3	53	52	49	45	..	204	45	April	Maurice H. Rees, M.D., Dean.....	6
CONNECTICUT											
7 Yale University School of Medicine, New Haven.....	3	19	26	51	50	..	206	51	March	Francis G. Blake, M.D., Dean.....	7
DISTRICT OF COLUMBIA											
8 Georgetown University School of Medicine, Washington.....	Degree	72	73	88	73	..	306	73	March	David V. McCutley, S.J., Ph.D., Dean.....	8
9 George Washington University School of Medicine, Washington.....	3	65	64	72	59	..	260	59	July	Walter A. Bloedorn, M.D., Dean.....	9
10 Howard University College of Medicine, Washington.....	2	64	30	36	21	..	151	22	June	John W. Lawlin, M.D., Dean.....	10
GEORGIA											
11 Emory University School of Medicine, Atlanta.....	3	64	51	49	54	..	218	54	.....	Russell H. Oppenheimer, M.D., Dean.....	11
12 University of Georgia School of Medicine, Augusta.....	3	51	43	43	37	..	179	37	May	G. Lombard Kelly, M.D., Dean.....	12
ILLINOIS											
13 Loyola University School of Medicine, Chicago.....	3	83	63	64	60	114†	270	107	March	Francis J. Bruehl, M.D., Dean.....	13
14 Northwestern University Medical School, Chicago.....	3	131	130	144	151	141†	556	161	.....	J. Roscoe Miller, M.D., Dean.....	14
15 University of Chicago, Rush Medical College.....	3	..	..	..	..	..	29†	94	.....	Frank Gray, M.D., Acting Dean.....	15
16 University of Chicago, The School of Medicine.....	3	..	..	..	..	..	255†	42	March	Victor Johnson, M.D., Dean of Students.....	16
17 University of Illinois College of Medicine, Chicago.....	3	162	160	152	142	158†	616	302	June	David J. Davis, M.D., Dean.....	17
INDIANA											
18 Indiana University School of Medicine, Bloomington-Indianapolis.....	3	130	117	113	98	..	458	98	March	Willis D. Gateh, M.D., Dean.....	18
IOWA											
19 State University of Iowa College of Medicine, Iowa City.....	3	89	69	47	81	..	286	80	July	Ever Murchison MacEwen, M.D., Dean.....	19
KANSAS											
20 University of Kansas School of Medicine, Lawrence-Kansas City.....	3	78	76	70	71	..	293	71	May	H. R. Wahl, M.D., Dean.....	20
KENTUCKY											
21 University of Louisville School of Medicine, Louisville.....	2	91	76	89	89	..	345	89	March	John Walker Moore, M.D., Dean.....	21
LOUISIANA											
22 Louisiana State University School of Medicine, New Orleans.....	3	92	87	84	75	..	338	75	.....	Beryl I. Burns, M.D., Dean.....	22
23 Tulane University of Louisiana School of Medicine, New Orleans.....	3	134	105	123	121	..	483	121	Jan.	Maxwell E. Lapham, M.D., Dean.....	23
MARYLAND											
24 Johns Hopkins University School of Medicine, Baltimore.....	Degree	70	62	78	72	..	282	72	June	Alan M. Chesney, M.D., Dean.....	24
25 University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore.....	3	100	83	89	92	..	369	92	Sept.	H. Boyd Wylie, M.D., Acting Dean.....	25
MASSACHUSETTS											
26 Boston University School of Medicine, Boston.....	3	55	52	52	34	..	193	33	April	Bennett F. Avery, M.D., Dean.....	26
27 Harvard Medical School, Boston.....	2	125	133	133	137	..	528	137	March	C. Sidney Barwell, M.D., Dean.....	27
28 Tufts College Medical School, Boston.....	Degree	107	97	94	88	..	386	90	Sept.	A. Warren Stearns, M.D., Dean.....	28
MICHIGAN											
29 University of Michigan Medical School, Ann Arbor.....	3	130	108	103	119	..	460	117	March	A. C. Furstenberg, M.D., Dean.....	29
30 Wayne University College of Medicine, Detroit.....	3 & Degree	64	62	67	35	58†	218	58	Feb.	Edgar H. Norris, M.D., Dean.....	30
MINNESOTA											
31 University of Minnesota Medical School, Minneapolis.....	3	126	114	106	105	130†	451	132	Jan.	Harold S. Diehl, M.D., Dean.....	31
MISSOURI											
32 St. Louis University School of Medicine, St. Louis.....	3	117	104	96	104	..	421	99	Sept.	Alphonse M. Schwifalla, S.J., Ph.D., Dean.....	32
33 Washington University School of Medicine, St. Louis.....	4	82	77	97	95	..	351	97	Sept.	Philip A. Shaffer, Ph.D., Dean.....	33

NEBRASKA

34	Crookston University School of Medicine, Omaha.....	3	63	47	51	62	..	223	64	June	Charles M. Willholm, M.D., Dean.....	34
35	University of Nebraska College of Medicine, Omaha.....	3	92	79	70	70	..	317	77	June	C. W. M. Foynter, M.D., Dean.....	35

NEW YORK

36	Albany Medical College, Albany.....	3	43	34	34	29	..	146	29	July	R. S. Cunningham, M.D., Dean.....	36
37	Long Island College of Medicine, Brooklyn.....	3	100	92	92	81	..	265	81	July	Jean A. Curran, M.D., Dean.....	37
38	University of Buffalo College of Medicine, Buffalo.....	3	70	65	65	68	..	200	66	March	Edward W. Koch, M.D., Dean.....	38
39	Columbia University College of Physicians and Surgeons, New York.....	3	110	100	97	104	..	411	104	Feb.	Willard C. Rappaport, M.D., Dean.....	39
40	Cornell University Medical College, New York.....	3 & Degree	84	71	76	64	..	294	63	.....	William S. Ladd, M.D., Dean.....	40
41	New York Medical College, Flower and Fifth Avenue Hospitals, New York.....	Degree	83	75	79	67	..	305	67	.....	J. A. W. Hetrick, M.D., Acting Dean.....	41
42	New York University College of Medicine, New York.....	3	120	118	123	123	..	490	122	Jan.	Currier McKee, M.D., Dean.....	42
43	University of Rochester School of Medicine and Dentistry, Rochester.....	3	54	50	48	44	..	202	43	March	George H. Whipple, M.D., Dean.....	43
44	Syracuse University College of Medicine, Syracuse.....	3	45	42	35	42	..	164	42	.....	H. G. Weiskotten, M.D., Dean.....	44

NORTH CAROLINA

45	Duke University School of Medicine, Durham.....	3	66	65	65	65	2311	262	65	April	Wilbur C. Davidson, M.D., Dean.....	45
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OHIO

46	University of Cincinnati College of Medicine, Cincinnati.....	3	77	75	73	70	7511	300	151	March	Stanley Dorst, M.D., Dean.....	46
47	Western Reserve University School of Medicine, Cleveland.....	3	79	73	67	63	..	282	63	Sept.	Torald Solmann, M.D., Dean.....	47
48	Ohio State University College of Medicine, Columbus.....	3 & Degree	78	69	70	69	..	295	68	June	Hardy A. Kemp, M.D., Dean.....	48

OKLAHOMA

49	University of Oklahoma School of Medicine, Oklahoma City.....	3	63	62	56	54	..	295	54	Aug.	Robert U. Patterson, M.D., Dean.....	49
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OREGON

50	University of Oregon Medical School, Portland.....	3	73	56	56	63	..	248	62	March	Richard B. Dillehunt, M.D., Dean.....	50
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PENNSYLVANIA

51	Hahnemann Medical College and Hospital of Philadelphia.....	3	147	135	132	130	..	544	120	Sept.	William A. Pearson, M.D., Dean.....	51
52	Jefferson Medical College of Philadelphia.....	Degree	130	129	120	130	..	508	120	Sept.	Randall C. Rosenberger, M.D., Acting Dean.....	52
53	Temple University School of Medicine, Philadelphia.....	3	108	95	116	116	..	425	112	Sept.	William N. Parkinson, M.D., Dean.....	53
54	University of Pennsylvania School of Medicine, Philadelphia.....	3	123	108	120	126	..	480	125	March	William Pepper, M.D., Dean.....	54
55	Woman's Medical College of Pennsylvania, Philadelphia.....	3	41	30	31	27	..	115	24	Aug.	Margaret D. Craklehill, M.D., Dean.....	55
56	University of Pittsburgh School of Medicine, Pittsburgh.....	3	86	79	71	55	..	291	55	March	William S. McElroy, M.D., Dean.....	56

SOUTH CAROLINA

57	Medical College of the State of South Carolina, Charleston.....	3	44	39	45	45	..	173	45	May	Robert Wilson, M.D., Dean.....	57
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TENNESSEE

58	University of Tennessee College of Medicine, Memphis.....	3	144	101	104	112	..	461	116	March	O. W. Hyman, Ph.D., Dean.....	58
59	McHenry Medical College, Nashville.....	3	67	61	50	48	..	216	48	.....	Edward L. Turner, M.D., Dean.....	59
60	Vanderbilt University School of Medicine, Nashville.....	3 & Degree	51	49	52	54	..	206	54	.....	Walter S. Leathers, M.D., Dean.....	60

TEXAS

61	Baylor University College of Medicine, Dallas.....	3	84	80	75	67	..	205	64	.....	Walter H. Moursund, M.D., Dean.....	61
62	University of Texas Medical Branch, Galveston.....	3	102	103	97	84	..	383	85	.....	John W. Spiro, M.D., Dean.....	62

VERMONT

63	University of Vermont College of Medicine, Burlington.....	3	32	30	31	31	..	124	31	May	Clarence H. Beecher, M.D., Chairman, Administrative Committee.....	63
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VIRGINIA

64	University of Virginia Department of Medicine, Charlottesville.....	3	71	61	63	55	..	250	54	May	Harvey E. Jordan, Ph.D., Dean.....	64
65	Medical College of Virginia, Richmond.....	3	80	77	66	72	..	295	74	.....	Leo E. Sutton, Jr., M.D., Dean.....	65

WISCONSIN

66	University of Wisconsin Medical School, Madison.....	3	77	85	46	50	..	258	48	March	William S. Middleton, M.D., Dean.....	66
67	Marquette University School of Medicine, Milwaukee.....	3	84	88	70	70	731	312	72	July	Eben J. Carey, M.D., Dean.....	67

CANADA

68	University of Alberta Faculty of Medicine, Edmonton, Alta.....	3	55	43	39	23	484	201	37	.....	John James Over, M.D., Acting Dean.....	68
69	University of Manitoba Faculty of Medicine, Winnipeg, Man.....	2	58	54	53	52	611	177	62	April	A. T. Mathers, M.D., Dean.....	69
70	Dalhousie University Faculty of Medicine, Halifax, N. S.....	2	63	49	40	42	491	177	41	.....	R. G. Grant, M.D., Dean.....	70
71	Queen's University Faculty of Medicine, Kingston, Ont.....	1	46	45	44	45	494	200	42	Aug.	Frederick Etherington, M.D., Dean.....	71
72	University of Toronto Faculty of Medicine, Toronto, Ont.....	2	47	46	33	29	264	229	71	Aug.	F. J. H. Campbell, M.D., Dean.....	72
73	University of Western Ontario Faculty of Medicine, London, Ont.....	1	133	130	117	116	1167	717	238	.....	W. E. Gaudin, M.D., Dean.....	73
74	McGill University Faculty of Medicine, Montreal, Que.....	3	109	96	91	89	385	285	80	March	R. C. Gaudin, M.D., Dean.....	74
75	University of Montreal Faculty of Medicine, Montreal, Que.....	Degree	63	53	49	48	531	283	54	Sept.	Albert LeSage, M.D., Dean.....	75
76	Laval University Faculty of Medicine, Quebec, Que.....	Degree	80	59	50	63	57	315	69	Sept.	Charles Yéand, M.D., Dean.....	76

Statistics of Recognized Schools of the Basic Medical Sciences will be found in table 5, page 589.

* On probation since Dec. 4, 1938.

† Enrollment not on above table by classes for the two medical schools of the University of Chicago.

‡ Fifth year (internship) enrollment not included in total column.

§ Fifth year (internship) discontinued beginning with the class of 1941 because of the national emergency.

|| Fifth year (internship) discontinued for class of 1941 because of the national emergency.

†† Two year internship required after graduation.

‡ Sixth year enrollment: Alberta, 38; Queen's, 44; Western Ontario, 31; Toronto, 130.

(Continued from page 685)

as a guide to medical schools in the selection of students and also to assist the prospective medical student in choosing a college for his premedical training. This list comprises colleges approved by the following national and regional educational associations:

- Association of American Universities.
- North Central Association of Colleges and Secondary Schools.
- Middle States Association of Colleges and Secondary Schools.
- New England Association of Colleges and Secondary Schools.
- Southern Association of Colleges and Secondary Schools.
- Northwest Association of Secondary and Higher Schools.

There are seven hundred and one colleges of arts and sciences approved by these agencies distributed as follows:

Association of American Universities.....	304
North Central	253
Southern	200
Middle states	128
Northwest	60
New England	44

Of those recognized by the Association of American Universities, all but nineteen are approved also by their district agency. In the various groups this dual approval of two hundred and eighty-five institutions is apportioned as follows:

North Central	109
Middle states	66
Southern	61
New England	31
Northwest	18

The five regional associations of colleges referred to cover among them the entire United States with the exception of the Far Southwest. Institutions in this area can secure only the approval of the national group—the Association of American Universities.

Junior colleges are approved by these agencies but are omitted from the Council's compilation. This action was taken Dec. 10, 1939 because the Council itself recommends three years of college preliminary to entrance into medical school and because all but a negligible percentage of medical students have actually taken three years or more in college. Medical schools, therefore, are selecting their students from among those who are already enrolled in colleges of arts and sciences which offer the full four year course leading to a bachelors' degree.

TABLE 3.—Requirements for Admission to Medical Schools, 1936-1941

	Degree	Years				
		Four	Three*	Three	Two and One-Half	Two
1936-1937.....	4	1	3	26	1	22
1937-1938.....	5	1	4	29	1	27
1938-1939.....	5	1	5	45	2	19
1939-1940.....	5	1	5	55	..	11
1940-1941.....	6	1	5	56	..	9
1941-1942.....	5	1	5	58	..	8

* Baccalaureate degree conferred in absentia at end of first medical year

While the minimum requirement of collegiate credit advocated by the Council is two years of college training, which include English and theoretical and practical courses in physics, biology and general and organic chemistry, three years or more in college is recommended. Since it cannot in general be assumed that all who have satisfied these requirements in terms of

hourly credits are fitted for the study of medicine, qualitative standards also are imposed. As a rule applicants receive their preliminary education in institutions approved by accrediting agencies. Exception, however, is made in the case of those students who demonstrate superior ability.

TABLE 4.—Freshman Students Admitted with Less than Three Years of College Preparation

	Number of Schools With Two Year Requirement	Percentage
1936-1937.....	32	12.5
1937-1938.....	27	7.4
1938-1939.....	10	3.8
1939-1940.....	11	2.0
1940-1941.....	9	1.4

For the session 1941-1942, sixty-nine of the seventy-seven medical schools in the United States have adopted preliminary requirements in excess of the minimum; i. e., five require a degree, fifty-eight require three years, one requires four years and five schools will admit students with three years of college work if the baccalaureate degree is conferred in absentia at the end of the first year in medicine. Only eight schools have a stated two year requirement. These schools are the Universities of Arkansas, George Washington, Howard, Louisville, Harvard, Buffalo, Pittsburgh and Tennessee. In table 3 are presented for six years figures indicating the trend toward increasing admission requirements. The College of Medical Evangelists increased its prerequisite for the forthcoming session to three years. Albany Medical College, for the duration of the national emergency, has reduced its preliminary requirement from a degree to three years of college.

The general trend toward three or more years of college work would appear to be due to a desire for more thorough grounding in all the branches of chemistry and greater familiarity with nonscience subjects, such as languages, literature, history or economics. In table 4 it will be noted that actually but 1.4 per cent of the entire freshman class of 1940-1941 was admitted with less than three years. Of the nine schools with a two year requirement for this session, three admitted none on this basis, one admitted five, another eleven, two accepted thirteen, while one accepted twenty and still another twenty-one, a total of eighty-three. Thus eighty-three students were enrolled in six schools with two years of college work, although in each case they represent less than 50 per cent of the freshman class. In 1936-1937, 12.5 per cent of the entering class had only the minimum of preliminary education, but by 1938-1939 the number dropped to 3.8 per cent and in 1940-1941 to 1.4 per cent.

The importance of careful selection of students of medicine cannot be overstated. No other element in medical education is so significant for the future. Schools of medicine are in a fortunate position as compared with other professional schools in that they receive annually applications from more than twice as many candidates as they can accept. Entrance requirements have been progressively raised, but the mere accumulation of college credits is no guaranty of fitness for the practice of medicine.

The faculties of medicine in Canada vary in their premedical requirement. For the session 1940-1941 two required a degree for admission to a five year course, two had a six year medical course preceded by senior

matriculation which is equivalent to the work of the first year in a college of arts, five, including one school offering courses in the basic sciences, required two years, and one school requires three years before beginning a four year course. A table appears later in this study which records the number of graduates of 1941 holding baccalaureate degrees (table 21).

With but five exceptions, namely California, Connecticut, Massachusetts, Missouri and Nebraska, the state licensing boards also exact the two year requirement. Although their statutes do not conform with the two year college prerequisite, these states, with the exception of Massachusetts, do not license other than graduates of approved schools. Table 6 records the preliminary training required by each state medical licensing board. Alaska, Hawaii and Puerto Rico likewise require two years of preliminary training.

LENGTH OF MEDICAL COURSE

In fifty-two medical schools in the United States the medical course is taught in four calendar years of approximately thirty-two weeks. Seven medical schools,

Rush Medical College has heretofore offered clinical courses but will discontinue undergraduate teaching with the class of 1942.

Ten schools in the United States and one in Canada offer only the first two years of the medical curriculum and are designated as schools of the basic medical sciences.

The majority of these schools are located in smaller communities where the material required for clinical teaching is almost wholly lacking. In some instances, facilities for the satisfactory teaching of such subjects as physical diagnosis and gross pathology must be sought at a distance from the school. Introductory courses in medicine and surgery, which commonly form a part of the second year schedule, may be similarly handicapped. A study of the problem by the Council on Medical Education and Hospitals led to the adoption on July 1, 1939 of approving these institutions as schools of the basic medical sciences. The Council in giving its approval to these schools assumes no responsibility for the character of those courses which involve the use of clinical material.

TABLE 5.—*Recognized Schools of the Basic Medical Sciences in the United States and Canada*

Name and Location of School	1941-1942	Students by Classes,			Applications for	Executive Officer
	Preliminary Requirement by Years	Session 1940-1941		Admission to the	1st Year Will Be Received Until	
		1st Year	2d Year	Totals		
ALABAMA						
1 University of Alabama School of Medicine, University (Tuscaloosa)	3	53	48	101	.....	Stuart Graves, M.D., Dean..... 1
MISSISSIPPI						
2 University of Mississippi School of Medicine, University	3	26	20	46	September	B. S. Guyton, M.D., Dean..... 2
MISSOURI						
3 University of Missouri School of Medicine, Columbia	3	40	43	83	August	Dudley S. Conley, M.D., Dean..... 3
NEW HAMPSHIRE						
4 Dartmouth Medical School, Hanover.....	3 & Degree	23	18	41	February	John P. Bowler, M.D., Dean..... 4
NORTH CAROLINA						
5 University of North Carolina School of Medicine, Chapel Hill	3	46	32	78	.....	W. Reece Berryhill, M.D., Acting Dean 5
6 Wake Forest College School of Medical Sciences, Wake Forest	3	36	30	66	September	C. C. Carpenter, M.D., Dean..... 6
NORTH DAKOTA						
7 *University of North Dakota School of Medicine, Grand Forks	3	26	21	47	September	H. E. French, M.D., Dean..... 7
SOUTH DAKOTA						
8 *University of South Dakota School of Medical Sciences, Vermillion	3	23	22	45	July	Joseph C. Ohlmacher, M.D., Dean.... 8
UTAH						
9 University of Utah School of Medicine, Salt Lake City	3	32	31	63	December	L. L. Daines, M.D., Dean..... 9
WEST VIRGINIA						
10 West Virginia University School of Medicine, Morgantown	3	26	19	45	September	Edward J. Van Liere, M.D., Dean.... 10
CANADA						
11 University of Saskatchewan School of Medical Sciences, Saskatoon, Sask.....	2	24	25	49	May	W. S. Lindsay, M.B., Dean..... 11

* On probation since May 13, 1939.

by eliminating long summer vacations, make possible completion of the course in less than forty-four consecutive months (table 7). A considerable number of the students of these schools do not elect to study during the summer months. The medical schools of the University of Chicago are operated on a plan of individual promotion permitting a student to advance as rapidly as he desires, but the great majority complete the course in twelve quarters. Medical practice acts of certain states, however, specify a four year professional course and it is advisable that students should assure themselves concerning the legal interpretation of the phrase.

Fifty-two schools offer a four year course; seven have a continuous schedule, four of which also require a hospital internship; seven require four years of systematic instruction followed by a fifth year spent as an intern or in research work. In all, there are sixty-six schools which offer the complete medical course.

Because of the existing national emergency, special sessions for senior medical students have been arranged in eleven schools to make possible completion of the course at an earlier date. These schools are named in table 8, together with data as to whether the schedule is required or optional, the date when these classes began, when they will end, and the date of graduation.

Four of the medical schools of Canada offer a five year course, four have a six year course, one offers four years and there is one school of the basic medical sciences. Three Canadian schools require an internship for graduation.

CURRICULUM

The standard curriculum recognized by the Council on Medical Education and Hospitals and contained in its Essentials of an Acceptable Medical School consists of from three thousand six hundred to four thousand

four hundred distributed as from nine hundred to one thousand hours a year and grouped under nine headings: anatomy, including histology and embryology; physiology; biochemistry; pathology, bacteriology and immunology; pharmacology; hygiene and sanitation; general medicine; general surgery, and obstetrics and

TABLE 6.—Requirements of Preliminary Training by Medical Licensing Boards

Two Years or More of College		
Alabama	Louisiana	Oregon
Alaska	Maine	Pennsylvania
Arizona	Maryland	Puerto Rico
Arkansas	Michigan	Rhode Island
Colorado	Minnesota	South Carolina
Delaware	Mississippi	South Dakota
District of Columbia	Montana	Tennessee
Florida	Nevada	Texas
Georgia	New Hampshire	Utah
Hawaii	New Jersey	Vermont
Idaho	New Mexico	Virginia
Illinois	New York	Washington
Indiana	North Carolina	West Virginia
Iowa	North Dakota	Wisconsin
Kansas	Ohio	Wyoming
Kentucky	Oklahoma	
One Year of College		
California	Connecticut	
High School Graduation or Its Equivalent		
Massachusetts	Missouri	Nebraska

gynecology. A certain percentage of hours of the whole number of hours in the courses is required in each of these groups.

APPROVAL OF SCHOOLS IN CANADA

At a meeting in Ottawa, Ont., in 1937, at which representatives of the medical schools in Canada and the assistant secretary of the Canadian Medical Association were present, the secretary speaking for the Council on Medical Education and Hospitals discussed the survey of Canadian medical schools made during 1934-1936 and inquired as to the policy to be adopted in the future; that is, whether the American Medical Association should continue the grading of medical schools in Canada or whether they would prefer that the medical schools themselves or some other body take over this task. The problem was referred to the Canadian Medical Association. At its sixty-ninth annual meeting in June 1938 the Committee on Medical Education of the Canadian Medical Association brought in a report which was accepted by the members of the General Council of the Canadian Medical Association and reads, in part, as follows:

In the event of the Council on Medical Education of the American Medical Association publishing a list of approved schools, those Canadian schools wishing their inspection and approval could request this inspection. This would leave each school free to deal directly with the Council on Medical Education of the American Medical Association and thus obviate misunderstandings. There seems to be a fairly uniform opinion expressed by the various medical schools in Canada that the Canadian Medical Association should share some responsibility in this country so far as medical education is concerned. The majority of the schools, however, feel that the aims and purposes of the Canadian Medical Association are not primarily those of undergraduate medical education, which is largely a problem of the schools themselves. However, it was recommended that, if the Council on Medical Education and Hospitals of the American Medical Association in the future conduct similar surveys at five or ten year intervals, such as the recent survey, the Canadian schools take advantage of and be included in this survey. Those schools which are members of the Association of American Medical Colleges could have a representative from

this association included in the personnel of the inspection. The remaining schools which are not members of the Association of American Medical Colleges could ask to have a member of the Association of American Medical Colleges included in the inspecting personnel, or some representative from the Committee on Medical Education of the Canadian Medical Association.

It would appear from the foregoing that the approval of Canadian medical schools by the Council on Medical Education and Hospitals of the American Medical Association rests with the schools themselves. The Council on Medical Education and Hospitals at a meeting in St. Louis on May 13, 1939 voted that after Jan. 1, 1945 the Canadian medical schools will be included in the Council's classification only at their request.

MEDICAL SCHOOLS AND SCHOOLS OF THE BASIC MEDICAL SCIENCES

Medical schools and schools of the basic medical sciences approved by the Council on Medical Education and Hospitals during 1940-1941 are listed in tables 2 and 5, pages 686-687 and 689. In addition to the name and location of the schools there is recorded the preliminary college requirement for the coming session, the enrolment by classes during 1940-1941, including figures indicating the number of fifth year students interning or engaged in research, the total attendance, the number of graduates receiving the degree of Doctor of Medicine since July 1, 1940, the month until which applications for admission to the freshman class are received and the name of the dean or executive officer. Three schools on probation are indicated by an asterisk. Figures for the sixth year enrolment in Canadian schools are given in a footnote. The fifth year (internship) enrolment is not included in the column giving the total number of students by classes. Two schools discontinued the internship requirement affecting the class of 1941, i. e. the University of Cincinnati College of Medicine, where it has been permanently dropped, and the University of Illinois College of Medicine. At the latter school, because of the national emergency, the requirement was waived for those completing the senior year in 1941. The University of Cincinnati awarded degrees to 75 students who completed the course in 1940 and served internships during 1940-1941, and to 76 who completed

TABLE 7.—Medical Schools Which, by Eliminating Long Summer Vacations, Make Possible Completion of Course in Less than Forty-Four Consecutive Months

	Freshmen Students Admitted	Advanced Students Admitted
Stanford University *	1 class a year	.....
University of Chicago.....	October	March and June
Northwestern University.....	September	Any quarter
University of Minnesota.....	September and January	.....
Duke University.....	October	.....
University of Tennessee.....	July, September, January, March	.....
University of Texas.....	.....	.....

* Plans indefinite.

four years work in 1941. The University of Illinois granted degrees to 164 students who completed the course in 1940 and served internships and to 138 who finished their four years of study in 1941. Duke University School of Medicine requires a two year internship after graduation, but one year of Army or Navy medical service is accepted in lieu of the second year of the internship. The two medical schools of the

University of Chicago do not report their students by classes, and in this tabulation, therefore, only the total enrolment is given.

The data presented in these tables constitute the basis also for several of the subsequent tabulations. Beginning on page 701 are given historical information and essential facts concerning the schools arranged by states.

TABLE 8.—Senior Year Schedule Advanced to Make Possible Completion of the Course at an Earlier Date

School	Required	Optional	Course Begins 1941	Course Ends 1942
College of Medical Evangelists.....	Yes	....	June 1	Feb. 28 *
George Washington.....	....	Yes	June 9	Feb. 22
Louisiana State University.....	Yes	....	June 16	Feb. 14
Tulane University.....	....	Yes	June 16	†
Boston University.....	....	Yes	June 8	March 1
Harvard Medical School.....	....	Yes	June 1	March 1
Tufts College.....	....	Yes	June 1	†
Wayne University.....	....	Yes	June 30	Feb. 28
Columbia University.....	....	Yes	June 1	Feb.
University of Cincinnati.....	....	Yes	June 23	Feb. ‡
University of Pennsylvania.....	Yes	....	Sept. 2	May 1

* February 28 for one fourth of the class; May 31 for remainder.

† Permitted to finish work two months earlier but will graduate with the regular class.

‡ Will graduate with regular class in June.

Sixty-seven medical schools in the United States and nine faculties of medicine in Canada are listed in table 3, and ten schools of the basic medical sciences in the United States and one in Canada in table 5. All but three of these schools at the present time have the approval of the Council; the three on probation being the University of Arkansas School of Medicine since Dec. 4, 1938 and the medical schools of the universities of North Dakota and South Dakota since May 13, 1939.

The freshman enrolment in eighty-five medical schools of the United States and Canada (excluding the schools of the University of Chicago, which do not report by classes) for the session 1940-1941 was 6,452, sophomores 5,847, juniors 5,485, seniors 5,360, fifth and sixth year students 299 and 248, respectively. In the two medical schools of the University of Chicago 470 students were enrolled, making a total of 24,161 in the eighty-seven schools listed.

In the United States there were 5,837 freshmen, 5,254 sophomores, 4,969 juniors, 4,849 seniors and the 470 students of the University of Chicago, a total of 21,379 students enrolled in seventy-seven schools. The number of students studying medicine in the United States, including fifth or intern year students, was 22,437. The enrolment in the schools of the basic medical sciences in the United States numbered 615, of which 331 were freshmen and 284 sophomores.

The enrolment in the ten Canadian faculties of medicine included first year 615, second 593, third 516, fourth 511, fifth 299, and sixth year 248, a total of 2,782. In the one school of the basic medical sciences in Canada there were 49 students: 24 freshmen and 25 sophomores.

Students enrolled in institutions in the United States and Canada and working for the degree of Doctor of Medicine numbered 24,161, exclusive of 1,058 fifth year students in the United States interning or engaged in research and 156 Canadian students serving internships. In addition there were 132 part time and 299 special students and 1,167 others studying in medical schools.

The degree of Doctor of Medicine since July 1, 1940 has been awarded to 5,837 students; 5,275 received the

degree from medical schools in the United States and 562 from Canadian faculties of medicine.

The schools of the basic medical sciences, with one exception, had an enrolment of less than 100. The lowest enrolment among the schools offering the complete course was 115 students at the Woman's Medical College of Pennsylvania and the highest 747 at the University of Toronto Faculty of Medicine. The high figure among schools in the United States was 616 at the University of Illinois College of Medicine.

Eight schools in the United States, exclusive of those of the basic medical sciences, matriculated less than 200 students, thirty-one between 201 and 300, thirteen from 301 to 400, ten from 401 to 500, and four from 501 to 600. One school matriculated more than 600. Among Canadian schools offering the entire medical course, one had an enrolment of less than 200, five between 201 and 300, two from 301 to 400 and one over 700. The smallest enrolment (41) was at Dartmouth Medical School, where 23 freshman and 18 sophomores were enrolled. This school does not offer the complete medical course.

Howard University College of Medicine graduated 22 students, the lowest number; Woman's Medical College of Pennsylvania, which had the lowest enrolment, 23 graduates. In the United States the University of Illinois College of Medicine granted the greatest number of degrees (302). This figure represents a double graduating class, since, because of the existing emergency, the internship was waived for the senior class of 1940-1941, representing 138 students. Fourteen schools granted degrees to classes of fewer than 50 students, thirty-eight graduated between 51 and 100 each, thirteen between 101 and 150, one between 151 and 200, and another more than 300. In Canada one school graduated more than a hundred students, while in four schools each there were between 51 and 100 graduates and also fewer than 50.

Of fifty-seven schools that replied to the inquiry regarding the month until which applications for admission to the first year class will be received, eighteen replied March, nine September, five each January, May, June and August, four each April and July, and two February.

BIRTHPLACE OF STUDENTS

In table 9 the birthplace of medical students of the United States and Canada in attendance during 1940-1941 is shown by schools. The state furnishing the greatest number of students, according to state of birth, was New York with 2,686, followed by Pennsylvania with 1,880, Illinois with 1,309 and Ohio with 1,085. Every state and the District of Columbia is represented in this table. From each of four states there was a student enrolment of between 701 and 1,000, and between 501 and 700, from five states 401 to 500, from seven states between 301 and 400, from nine states each 201 to 300 and 101 to 200, and from seven states less than 100. There were 208 born in the United States territories and possessions studying in fifty schools in the United States and two in Canada. In addition, 2,511 students of Canadian birth were also studying medicine, 127 of whom matriculated in forty-five schools in the United States and 2,384 in ten Canadian medical schools. Eighteen students of Canadian birth were registered at the College of Medical Evangelists, 10 at Wayne University College of Medicine and 7 at the University of Oregon Medical School. All other schools registered fewer than 7.

(Continued on page 694)

of Students

[illegible]

(Continued from Page 691)

Students born in New York were enrolled in all but ten schools and in every state with the exception of Mississippi, North Dakota, Oregon, South Dakota, Utah and West Virginia. Students from New York were registered in two of the six provinces of Canada having medical schools. None were studying in Alberta, Manitoba, Nova Scotia or Saskatchewan. Pennsylvania was represented in all but eleven states and four provinces.

There were 729 students born in New Jersey, which has no medical school, admitted to sixty-three schools, while 321 from the state of Washington, which likewise has no medical school, enrolled in forty-eight schools. From the twelve states in which no medical schools are located there were 1,892 students in at least sixty-three schools as follows:

	Enrolled	No of Schools
Arizona	47	29
Delaware	36	17
Florida	187	38
Idaho	112	35
Maine	113	34
Montana	125	38
Nevada	25	17
New Jersey	729	63
New Mexico	41	24
Rhode Island	115	27
Washington	321	48
Wyoming	41	19
	1,892	

Students of foreign birth were enrolled in sixty-three of the seventy-seven medical schools of the United States and in every Canadian school. There were 623

TABLE 10—Students Classified by Birthplace

	Schools	Attending School in State of Birth	Birth Place Elsewhere
Alabama	1	73	28
Arkansas	1	183	16
California	4	387	501
Colorado	1	118	86
Connecticut	1	45	161
District of Columbia	3	130	587
Georgia	2	204	103
Illinois	5	817	695
Indiana	1	445	15
Iowa	1	222	64
Kansas	1	188	101
Kentucky	1	143	202
Louisiana	2	386	430
Maryland	2	177	474
Massachusetts	3	482	625
Michigan	2	404	304
Minnesota	1	527	124
Mississippi	1	28	8
Missouri	3	250	620
Nebraska	2	275	265
New Hampshire	1	8	33
New York	9	1,678	968
North Carolina	1	145	250
North Dakota	1	23	14
Ohio	5	694	279
Oklahoma	1	141	92
Oregon	1	92	157
Pennsylvania	6	1,264	1,015
South Carolina	1	157	16
South Dakota	1	20	20
Tennessee	2	270	617
Texas	2	532	156
Utah	1	50	13
Vermont	1	79	13
Virginia	2	294	451
West Virginia	1	40	5
Wisconsin	2	201	279
Canada	10	2,774	225
Total	57	15,650	10,002

so enrolled, 456 in the United States and 167 in Canada. Thirty were so registered at New York University College of Medicine, 28 at Harvard Medical School and 26 at the College of Medical Evangelists. Other schools registered fewer than 16. It may be presumed

that many of these students are now citizens of the United States.

The medical school enrolment is further classified by birthplace in table 10. This compilation reveals that 13,659 students are studying in the state of their birth and 10,502 elsewhere. This is particularly significant in Illinois, where, of the 1,912 students enrolled in five schools, 995 were born outside the state. More than 950 born outside the state were enrolled in institutions in New York and Pennsylvania, but the number of those born within and studying in these states was greater. Schools located in California, Connecticut, the District of Columbia, Kentucky, Louisiana, Maryland, Massachusetts, Missouri, New Hampshire, North Carolina, Oregon, South Dakota and Tennessee enrolled more students from outside the state than from within.

In the United States 11,275 students were attending school in the state of their birth and 9,104, 45 per cent, elsewhere. Eliminating the 1,892 students from states which have no medical school, there are still 7,212 students who, though born in a state which had a medical school, are studying elsewhere.

While a perusal of table 10 will show many instances wherein the number studying elsewhere far exceeds the number attending school in the state of birth, it also shows some states in which the contrary is the case, notably Arkansas, Georgia, Indiana, Iowa, Minnesota, Ohio, South Carolina and Texas.

In Canada 398 of the 2,782 students were born outside the dominion.

It should not be inferred that every medical student enrolled in a state other than that of his birth is still a resident of his natal state. Still less should it be assumed that every one of these students has become a legal resident of the state in which his professional studies are pursued.

RESIDENT AND NONRESIDENT STUDENTS

Table 11 gives for each medical school in the United States the number of resident and nonresident students according to the individual school's definition of the word "resident." There is a wide variation in the definition of this term among both state universities and other schools. In some universities this is determined by the legal or permanent residence of the student, parents or guardian only, while in some schools continuous residence for from six months to one, two or three years just prior to the student's application for enrolment is also required. Other schools require the student to be a voter; that the parents' home in the state be established prior to the beginning of premedical work; the student to be a taxpayer or a dependent of a taxpayer, regardless of whether he resides in the state, while other schools require the student to be self-supporting. In a few schools each case is determined by an attorney after consideration of birth, citizenship, residence of parents and so on. Most commonly residence is determined by ascertaining whether the student's parents or guardian has been a bona fide resident for a period of not less than six months. Among medical schools of other than state universities a residence is defined for the most part by the home address of the student or the legal residence of the parents or guardian.

The sixty-seven approved medical schools and the ten approved schools of the basic medical sciences reported 13,278 resident and 8,101 nonresident students. The state university enrolling the greatest number of nonresidents was the University of Tennessee College

of Medicine, which had 218 resident and 243 non-resident students, while at the Universities of Georgia, Illinois, Missouri and West Virginia nonresidents were not registered.

Among other than state universities, it will be noted, there are many schools which select their students from

TABLE 11.—Resident and Nonresident Students

	Resident Students	Nonresident Students	Totals
University of Alabama	87	14	101
University of Arkansas	279	57	286
"	234	5	239
"	116	182	298
"	190	11	201
Stanford University	198	42	240
University of Colorado	183	21	204
Yale University	54	152	206
Georgetown University	27	279	306
George	91	167	258
Howard	18	133	151
Emory	137	81	218
University of Georgia	179		179
Loyola	133	137	270
Northwestern	207	349	556
Rush Medical College	32	180	212
University of Chicago, The School of Medi-			
cine	94	164	258
"	616		616
"	447	13	459
"	250	6	256
"	275	14	289
University of California	161	184	345
The University of Tennessee	234	84	318
"	130	303	433
"	71	211	282
"	108	211	319
"	123	70	193
"	110	418	528
"	295	91	386
"	323	132	455
"	213	30	243
"	406	45	451
"	45	1	46
"	83		83
"	72	349	421
"	121	230	351
"	36	167	203
"	302	15	317
"	8	33	41
"	100	40	140
Schools and College of Medicine	277	88	365
University of Buffalo	210	56	266
Columbia University	104	213	317
Cornell	149	145	294
New York	205	100	305
New York	373	126	499
University	114	88	202
Syracuse	121	43	164
University	59	19	78
Duquesne	61	201	262
W	56	10	66
Un	46	1	47
Un	191	115	306
Un	208	74	282
Un	294	1	295
Un	224	11	235
"	152	96	248
"	293	231	524
"	302	206	508
"	251	184	435
"	240	206	446
"	40	75	115
University of "	256	5	261
Medical College	157	16	173
University of "	34	11	45
University of "	218	241	459
McHarr	10	206	216
Vander	76	130	206
Baylor	269	37	306
University of Texas	350	2	352
University of Utah	55	5	60
University of Vermont	100	24	124
University of Virginia	172	78	250
"	180	145	325
"	45		45
"	241	17	258
"	132	180	312
Totals	13,278	8,101	21,379

academic year 1936-1937, are shown in table 12. The figures do not vary to any measurable extent.

The ten faculties of medicine of Canada, including one offering courses in the basic medical sciences, reported 1,890 residents and 892 nonresident students. The definition of a resident by these schools varied from students whose permanent address is within one of the provinces of Canada, or the specific province in which the school is located, to home address on registration and taxpayers. The greatest number of nonresidents in any one school was reported by McGill University Faculty of Medicine. This school obtains a large portion of its student body from the United States.

The figures in tables 11 and 12 giving the number of residents and nonresidents and the preceding one classifying students by birthplace shows a divergence. More than 1,000 students born outside the state have been classified as residents. Excluding Canadian registration given in tables 9 and 10, there were 11,275 attending school in the state of their birth and 9,104

TABLE 12.—Resident and Nonresident Students, 1936-1940

	Resident	Nonresident	Totals
1936-1937	14,026	8,060	22,086
1937-1938	13,518	8,069	21,587
1938-1939	13,418	7,884	21,302
1939-1940	13,292	7,970	21,262
1940-1941	13,278	8,101	21,379

elsewhere, as compared with 13,278 whose legal residence is in the state in which they are pursuing their medical courses and 8,101 classified as nonresidents.

Comparing the figures for Canada in table 10 reveals somewhat similar results: 2,384 born in Canada and 398 elsewhere, while there were 1,890 residents and 892 nonresidents.

SCHOOLS, STUDENTS AND GRADUATES BY STATES

The number of schools, students and graduates by states are shown in table 13. Medical schools are located in thirty-six states and the District of Columbia. New York, with the largest number of schools, nine, had the greatest number of students (2,646) and 617 graduates, respectively. Pennsylvania with six schools had 2,379 students and 565 graduates; Illinois with five schools 1,912 students and 679 graduates ranks third, while Massachusetts with three schools, 1,107 students and 260 graduates completes the group of states having an enrolment of more than 1,000, although California had just under 1,000 students, 978 students and 253 graduates respectively.

In the seventy-seven schools, including those that offer courses in the basic medical sciences only, there were 21,379 students and 5,275 graduates. Students interning as a requirement for the degree, fifth year students, are not included in this tabulation. Neither are part time, special or other students pursuing courses in medical schools not leading to the M.D. degree.

The greatest number of graduates in any one state was 679 who completed their course in Illinois. There were 617 from New York schools and 565 from schools in Pennsylvania. Four other states had more than 200 graduates—California, Massachusetts, Ohio and Tennessee. Ten states had more than 100 but less than 200 graduates. Seven states had no graduates, as the medical schools located therein do not offer the complete medical course. All others had less than 100, the lowest being 31 who received their degrees from the one medical school in Vermont.

among the residents of the state. This is particularly significant at the Universities of Southern California, Stanford, Tufts, Long Island and Baylor. The enrolment in municipally controlled medical schools consisted largely of resident students.

Figures indicating enrolment of resident and non-resident students for five years, beginning with the

The status of two medical schools will change in the future.

Undergraduate courses at Rush Medical College will terminate in June 1942, when the students now enrolled will complete their courses. For the session 1941-1942

TABLE 13—*Schools, Students and Graduates by States **

	Schools	Students	Graduates
Alabama	1	101	
Arkansas	1	286	70
California	4	978	253
Colorado	1	204	45
Connecticut	1	206	51
District of Columbia	3	717	154
Georgia	2	397	91
Illinois	5	1,912	679
Indiana	1	458	98
Iowa	1	246	80
Kansas	1	289	71
Kentucky	1	345	89
Louisiana	2	821	196
Maryland	2	651	164
Massachusetts	3	1,107	260
Michigan	2	708	175
Minnesota	1	451	132
Mississippi	1	46	
Missouri	3	855	196
Nebraska	2	540	141
New Hampshire	1	41	
New York	9	2,646	617
North Carolina	3	406	65
North Dakota	1	47	
Ohio	3	883	282
Oklahoma	1	235	54
Oregon	1	248	62
Pennsylvania	6	2,379	565
South Carolina	1	173	45
South Dakota	1	45	
Tennessee	3	883	212
Texas	2	688	149
Utah	1	63	
Vermont	1	124	31
Virginia	2	545	128
West Virginia	1	45	
Wisconsin	2	570	120
Totals	77	21,379	5,275

* Excluding fifth or intern year students

only senior students will be enrolled. Rush Medical College has formed an affiliation with the University of Illinois, and its clinical facilities will after June 1942 be available to the university for purposes of graduate and undergraduate instruction.

On Aug. 4, 1939 the board of trustees of Wake Forest College accepted the resources of the Bowman Gray Foundation in Winston-Salem. The medical school of Wake Forest College was moved to Winston-Salem in the summer of 1941 and will be known as the Bowman-Gray School of Medicine of Wake Forest College. The school is planning to offer a complete medical course beginning with the session 1942-1943.

REQUIRED INTERNSHIPS

In tables 14 and 15 are listed the medical schools and state licensing boards now requiring internships for the M.D. degree and state licensure respectively.

Eleven schools in the United States and three in Canada require an internship for graduation. Several medical schools will accept research or other clinical work in lieu of hospital service. The University of Minnesota Medical School in 1915 was the first school to adopt the internship as a basis for the M.D. degree. The two medical schools of the University of Chicago, i. e. Rush Medical College and The School of Medicine, discontinued this formal requirement in 1936, and Louisiana State University School of Medicine in 1940. During 1941 this requirement was dropped by the University of Cincinnati School of Medicine, affecting the senior class of 1941. At the University of Illinois College of Medicine the internship requisite was waived for the senior class of 1941 because of the national

emergency. The two schools last named awarded 151 and 302 M.D. degrees, respectively, to the group who interned during the last academic session and to those who completed only the four year medical course during this period. The fifth year was also discontinued by McGill University Faculty of Medicine as a result of the reorganization of its medical curriculum affecting the freshman class of 1936-1937. The M.D. degree is conferred by this school on completion of four sessions of thirty-six teaching weeks, but the holders of these degrees are not eligible for the licensing examination in Quebec until the completion of a hospital internship. The M.D. degree is likewise conferred by Duke University School of Medicine after completion of the senior year, but all graduates are required to spend at least two years in a hospital or laboratory work after graduation. This school will now accept one year of military service in lieu of the second year of internship. While this requisite has been dropped by four schools in the United States and one in Canada since 1936, a similar requirement has not been added to the qualifications for an M.D. degree by any school.

The medical licensing boards of twenty-one states, the District of Columbia, Alaska, Hawaii and Puerto Rico require that all applicants for licensure serve a hospital internship. The first state exacting this requirement was Pennsylvania in 1914. Some states require the internship of graduates of medical faculties abroad and of applicants for reciprocity or endorsement.

Some of the medical schools and licensing boards have their own list of hospitals acceptable for intern training, but the list of hospitals approved for intern training by the Council on Medical Education and

TABLE 14—*Internship Required by Medical Schools*

University of California Medical School
College of Medical Evangelists
University of Southern California School of Medicine
Stanford University School of Medicine
Loyola University School of Medicine
Northwestern University Medical School
University of Illinois College of Medicine *
Wayne University College of Medicine
University of Minnesota Medical School
Duke University School of Medicine **
Marquette University School of Medicine
University of Manitoba Faculty of Medicine
Dalhousie University Faculty of Medicine
University of Montreal Faculty of Medicine

* Internship discontinued for class of 1941 because of the national emergency.

** Two year internship required.

TABLE 15—*Internship Required by Medical Licensing Boards of All Candidates*

Alabama	Michigan	Rhode Island
Alaska	New Hampshire	South Dakota
Delaware	New Jersey	Utah
District of Columbia	North Dakota	Vermont
Hawaii	Oklahoma	Washington
Idaho	Oregon	West Virginia
Illinois	Pennsylvania	Wisconsin
Iowa	Puerto Rico	Wyoming
Louisiana		

Some states require the internship of graduates of medical faculty abroad and reciprocity or endorsement applicants

Hospitals is generally in use. A revised edition of the Council's list will be found beginning on page 757.

There were 1,058 students in the United States and 156 in Canada, a total of 1,214, reported as completing the fifth or intern year requirement of the medical schools which exact the fulfillment of the internship as

a requisite for the M.D. degree. Statistics computed indicate that 98 per cent of the graduates of recent years have obtained or are obtaining this added experience.

DISTRIBUTION BY SEX

Students and graduates in the United States distributed by sex are given in table 16. Seventy-six schools had both men and women students, of which

TABLE 16.—*Distribution by Sex*

	Students		Graduates	
	Men	Women	Men	Women
University of Alabama.....	98	3	..	3
University of Arkansas.....	276	10	67	5
University of California.....	210	29	47	1
College of Medical Evangelists.....	284	14	81	10
University of Southern California.....	199	2	48	1
Stanford University.....	227	13	56	5
University of Colorado.....	192	12	44	1
Yale University.....	190	16	48	3
Georgetown University.....	306	..	73	..
George Washington University.....	240	20	57	2
Howard University.....	134	17	16	4
Emory University.....	218	..	54	..
University of Georgia.....	173	6	37	..
Loyola University.....	259	11	104	3
Northwestern University.....	537	19	131	3
Rush Medical College.....	201	11	89	5
University of Chicago, The School of Medicine.....	242	16	38	4
University of Illinois.....	578	38	279	23
Indiana University.....	436	22	95	3
State University of Iowa.....	272	14	75	5
University of Kansas.....	276	13	69	2
University of Louisville.....	335	10	86	3
Louisiana State University.....	327	11	73	2
Tulane University of Louisiana.....	463	20	117	4
Johns Hopkins University.....	255	27	66	6
University of Maryland.....	347	22	84	9
Boston University.....	169	24	28	5
Harvard Medical School.....	528	..	137	..
Tufts College.....	367	19	86	4
University of Michigan.....	427	33	106	11
Wayne University.....	235	13	54	4
University of Minnesota.....	416	35	125	7
University of Mississippi.....	44	2	..	..
University of Missouri.....	81	2	..	..
St. Louis University.....	421	..	99	..
Washington University.....	326	25	89	8
Creighton University.....	212	11	61	3
..	307	10	76	1
..	41	..	..	..
..	130	10	28	1
..	340	25	76	5
University of Buffalo.....	246	20	61	5
Cornell.....	356	25	100	4
Cornell.....	274	20	57	6
New York.....	284	21	64	3
New York.....	461	38	114	8
University of Rochester.....	190	12	40	3
Syracuse University.....	151	13	37	5
University of North Carolina.....	75	3	..	..
..	255	7	63	2
..	63	3	..	..
..	47	..	..	..
..	292	14	143	8
Western Reserve.....	273	9	62	1
Ohio State.....	279	16	65	3
University of Oregon.....	224	11	51	3
University of Oregon.....	242	6	60	2
Hahnemann Medical College.....	544	..	130	..
Jefferson Medical College.....	508	..	120	..
..	397	38	103	9
..	463	23	121	4
..	..	115	..	23
..	282	9	54	1
..	167	6	42	3
..	45	..	..	..
University of Tennessee.....	446	15	106	4
McHarr Medical College.....	208	8	46	2
..	200	6	53	1
..	293	13	61	3
..	330	23	82	3
..	59	..	..	..
..	119	5	30	1
..	240	10	52	2
..	267	26	65	9
..	44	1	..	..
..	234	24	42	6
..	297	15	71	1
..	186	15	34	3
University of Washington.....	198	19	57	5
Dalhousie.....	173	4	41	..
Queen's.....	266	..	42	..
University of Toronto.....	204	16	29	1
..	688	59	128	10
..	356	29	81	6
..	195	8	53	1
..	310	5	67	2
..	44	5	..	..
Totals.....	22,853	1,308	5,527	310

sixty-six had women graduates. Of this total, nine Canadian faculties had students of both sexes and four had both men and women graduates. Women were enrolled in six of the ten schools in the United States offering courses of the basic medical sciences and also in the one such school located in Canada.

Male students numbered 22,853 and included 5,527 graduates; the number of female students 1,308 and graduates 310. In the United States there were 20,233 male students and 4,995 graduates, and in Canada 2,620 students and 532 graduates. Likewise there were 1,146 women students and 280 graduates in the United States and 162 women students and 30 graduates in Canada.

There were 2,924 students and 655 graduates enrolled in schools which are not coeducational. Included in these figures are 266 students and 42 graduates of one school in Canada.

In the one medical school for women, 115 students were enrolled and 23 graduates.

An average of 16 women students were enrolled in the sixty-eight coeducational institutions, and an average of 3 graduated from each of fifty-nine schools. The greatest number of women enrolled in coeducational institutions in the United States was 38 each studying at the University of Illinois, New York University and Temple University, while in Canada the University of Toronto enrolled 59.

TABLE 17.—*Distribution by Sex in the United States and Canada, 1936-1940*

Year	Students		Graduates	
	Male	Female	Male	Female
1935-1936.....	24,219	1,254	5,388	269
1936-1937.....	23,767	1,244	5,024	261
1937-1938.....	23,234	1,307	5,439	252
1938-1939.....	22,919	1,293	5,290	285
1939-1940.....	22,903	1,291	5,430	273
1940-1941.....	22,853	1,308	5,527	310

Figures are given in table 17 showing this distribution for a six year period. While the total number of male students has been slightly decreasing, the figures show a slight increase in women medical students.

WOMEN IN MEDICINE

The first woman to receive the degree of Doctor of Medicine in the United States was Elizabeth Blackwell. She studied in and graduated from the Geneva Medical College at Syracuse, N. Y., in 1849. The first medical school for women, the Woman's Medical College of Pennsylvania, was organized in 1850 with a class of seven. It is still functioning and is said to be the only medical school exclusively for women.

During the past year, as shown in table 18, there were 1,146 women studying medicine, constituting 5.4 per cent of the total student enrollment. Twenty-seven more women were graduated than in 1940. They numbered 280, or 5.3 per cent. Of the women matriculants, 115 were in attendance at the one medical school for women while 1,031 were matriculated in sixty-eight other schools. Twenty-three were graduates of the Woman's Medical College of Pennsylvania, while 257 secured their degrees from coeducational schools. In the seventeen years since 1925, 3,801 have received degrees in medicine. Statistics compiled from the American Medical Directory revealed that in 1940 there were 7,470 women physicians in the United States listed.

Women are admitted to all medical schools of the United States except Georgetown University School of Medicine, Emory University School of Medicine, Harvard Medical School, St. Louis University School of Medicine, Dartmouth Medical School and Jefferson Medical College.

The two schools which have been coeducational since their organization had no women students, namely the Universities of North and South Dakota.

The Hahnemann Medical College of Pennsylvania, which has never admitted women as students, will accept them for the next session.

PART TIME, SPECIAL AND OTHER STUDENTS
ENROLLED IN MEDICAL SCHOOLS

In forty-two medical schools in the United States and five in Canada, during the session 1940-1941, there were 1,598 part time, special and other students pursuing medical subjects, which are summarized in table 19. This group comprises 132 part time, 299 special and 1,167 others.

The students studying part time were enrolled in twenty-one schools in the United States and two in Canada. The largest group enrolled in any one school were 38 studying at the University of Kansas School of Medicine. Fourteen were registered at the University of Buffalo and 10 at the University of Pittsburgh. Less than 5 were enrolled in thirteen schools.

The 299 special students matriculated in twenty-eight schools in the United States and three in Canada. The greatest number (107) were at Northwestern University Medical School. At The School of Medicine of the University of Chicago 40 were in attendance, at the University of Texas 21, Columbia University and the University of Toronto each had 18 special students, while the University of Tennessee admitted 17. All other schools registered fewer than 10.

There were also 1,167 students not candidates for the medical degree pursuing medical subjects in eighteen medical schools of the United States and four in Canada. For the most part these students are enrolled in the graduate school. At New York University there were 245 such students and at the University of Illinois 225. Northwestern registered 138, the University of

SCHOOLS, STUDENTS AND GRADUATES, 1905-1941

The number of medical schools, students and graduates in the United States for five year intervals from 1905 to 1920 and for each year since is shown in table 20. In 1905 in the one hundred and sixty schools then

TABLE 19.—Part Time, Special and Other Students Enrolled in Medical Schools, 1940-1941

	Part Time	Special	Others Enrolled
University of Arkansas...	6	8	..
University of California...	..	..	172
University of Southern California	1	2	29
Georgetown University...	..	1	..
Emory University...	1	..	..
Loyola University...	2	1	..
Northwestern University .....	..	107	138
Rush Medical College .....	..	1	..
Univ. of Chicago, The School of Medicine .....	..	40	..
University of Illinois .....	..	3	225
Indiana University .....	..	7	..
State University of Iowa	2	..	17
University of Kansas	38	9	..
Louisiana State University .....	..	3	..
Tulane University	4	..	..
Johns Hopkins University	6	10	..
Boston University .....	..	1	7
McGill College .....	..	1	..
..	6	6	2
..	6	..	33
..	..	1	..
..	5	..	..
..	3	..	35
..	..	..	3
Albany Medical College .....	..	1	..
Columbia University .....	..	18	46
New York Medical College .....	..	..	13
New York University	6	2	245
University of Buffalo	14	2	..
University of North Carolina	2	..	..
University of Cincinnati .....	..	1	..
University of Oklahoma .....	..	3	6
University of Oregon .....	..	6	21
..	10	..	..
..	1	1	..
..	3	..	..
..	..	1	..
..	17	..	6
..	..	..	97
Vanderbilt University .....	..	21	..
University of Texas	2	..	..
University of Utah	1	2	..
Marquette University	3	..	..
McGill University	1	..	10
University of Manitoba .....	..	3	1
University of Montreal .....	..	..	51
University of Toronto	8	18	53
University of Western Ontario .....	..	3	..
Total	132	299	1,167

TABLE 18.—Women in Medicine in the United States

Year	Women Students	Percentage of All Students	Women Graduates	Percentage of All Graduates
1905	1,072	4.1	219	4.0
1910	997	4.0	116	2.6
1915	572	4.0	92	2.6
1920	818	5.5	122	4.0
1925	910	5.0	201	5.1
1926	957	5.0	212	5.4
1927	961	4.9	181	4.7
1928	929	4.5	207	4.9
1929	927	4.4	214	4.8
1930	955	4.4	204	4.5
1931	990	4.5	217	4.6
1932	965	4.5	205	4.2
1933	1,066	4.7	214	4.4
1934	1,629	4.5	211	4.2
1935	1,677	4.7	207	4.1
1936	2,313	5.0	246	4.7
1937	1,115	5.1	258	4.4
1938	1,161	5.1	277	4.6
1939	1,141	5.1	290	5.1
1940	1,145	5.1	255	5.0
1941	1,146	5.1	280	5.5

California 132 and Vanderbilt University 97, while other schools matriculated fewer than 55.

The University of Southern California, the University of Michigan, New York University and the University of Toronto matriculated all three of these types of students.

existing there were 26,147 students. The total number of undergraduate medical students for the college session 1940-1941 was 21,379, an increase of 108 over 1930-1940. This tabulation covers only candidates for the M.D. degree and does not include part time and special students, though their work may later be accepted as fulfilling part of the requirement for the M.D. degree.

In the ten years 1910 to 1920 there was a decrease in enrolment of more than 7,000, while from 1921 to 1935 there was a continuous increase. For four years the trend was slightly downward, and then in 1940 there was again an increase. This year it may be expected to increase still further, since some schools have announced a 10 per cent increase in the size of freshman classes because of the national emergency. Some schools also are planning slight increases in the enrolment of their advanced classes.

The number of graduates in 1941 was 5,275, an increase of 178 over 1940. The discontinuance of the internship requirement by two schools is responsible for the increase. The additional graduates numbered 214. There were, however, fewer graduates in 1941 from sixty-seven schools granting the M.D. degree than from 160 schools in 1905. With the exception of 1933, 1938 and 1939 there has been an increase in the number of medical graduates each year since 1925.

The decrease in student enrolment in 1936 and in the number of graduates in 1940 was in part the result of the survey of medical schools conducted by the Council on Medical Education and Hospitals during 1934-1936 and its recommendation to several medical schools that their enrolment be decreased in order to provide more adequate opportunities for the student body. There would have been a decrease in the graduating class of 1941 had not two schools discontinued their intern year.

Not shown in the table this year are figures for the year when the lowest number of M.D. degrees were granted. In that year (1922) there were only 2,520 graduates because of the small size of the class that entered as freshmen in 1918 during the World War.

TABLE 20.—Schools, Students and Graduates in the United States, 1905-1941

	Schools	Students*	Graduates
1905.....	160	26,147	5,026
1910.....	131	21,526	4,440
1915.....	96	14,591	3,536
1920.....	85	13,798	3,047
1921.....	83	14,466	3,186
1922.....	81	15,635	2,529
1923.....	80	16,500	3,120
1924.....	79	17,728	3,562
1925.....	80	18,200	3,974
1926.....	79	18,810	3,962
1927.....	80	19,662	4,035
1928.....	80	20,545	4,262
1929.....	76	20,878	4,446
1930.....	76	21,897	4,565
1931.....	76	21,982	4,735
1932.....	76	22,125	4,936
1933.....	77	22,466	4,895
1934.....	77	22,799	5,035
1935.....	77	22,888	5,101
1936.....	77	22,564	5,183
1937.....	77	22,093	5,377
1938.....	77	21,687	5,104
1939.....	77	21,302	5,089
1940.....	77	21,271	5,697
1941.....	77	21,379	5,275

* Includes figures for schools of the basic medical sciences.

The number of medical schools in 1905 was one hundred and sixty; by 1910 the number dropped to one hundred and thirty-one and since 1915 there have been fewer than one hundred. Since 1933 there have been in the United States sixty-six approved four year schools, one offering only clinical courses, and ten schools of the basic medical sciences.

In the seventy-seven medical schools in the United States, including the schools of the basic medical sciences, there were 21,379 students and 5,275 graduates.

GRADUATES WITH BACCALAUREATE DEGREES

Table 21 records the number of graduates of medical schools in 1941 who held baccalaureate degrees. It will be noted that 3,647 of the 5,837 graduates held such degrees, while only five schools require a degree for admission. All the graduates of Stanford, Chicago, Wayne, Albany, Cornell, Western Reserve, Oregon, Jefferson and Vanderbilt—nine schools—held baccalaureate degrees. One of these schools has a degree requisite for admission, three will enroll students with three years of college training if the baccalaureate degree is conferred at the end of the first year in medicine, while four schools have a three year requirement. Four schools in the United States which have a degree requirement accepted altogether 9 students with less than the stated college education. None of the graduates of the University of Arkansas, the Medical Col-

lege of South Carolina or Dalhousie University were in possession of a college degree. The school in the United States having the fewest graduates with college degrees was Columbia University. Only 4 of the 104 graduates

TABLE 21.—Graduates with Baccalaureate Degrees

	Graduates	Degrees
University of Arkansas.....	70	..
University of	52	51
College of Me.....	91	33
University of	49	38
Stanford University	61	61
University of Colorado.....	45	26
Yale University	51	49
Georgetown University	73	53
George Washington University.....	50	46
Howard University	22	9
Emory University	54	36
University of Georgia.....	37	19
Loyola University	107	25
Northwestern University	134	73
Rush Medical College.....	94	39
University of Chicago, The School of Medicine.....	42	42
University of Illinois.....	302	23
Indiana University	98	55
State University of Iowa.....	80	25
University of Kansas.....	71	42
University of Louisville.....	89	55
Louisiana State University.....	75	41
Tulane University of Louisiana.....	121	81
Johns Hopkins University.....	72	70
University of Maryland.....	92	75
Boston University	33	32
Harvard Medical School.....	137	126
Tufts College	90	87
University of Michigan.....	117	87
Wayne University	58	58
University	132	32
St. Louis	99	63
Washington University	97	83
Craigton University	64	31
University of Nebraska.....	77	36
Albany Medical College.....	29	29
Long Island College of Medicine.....	81	72
University of Buffalo.....	60	34
Columbia University	104	4
Cornell University	63	63
New York Medical College.....	67	63
New York University.....	122	120
University of Rochester.....	43	39
Syracuse University	42	36
Duke University	65	48
University of	151	49
Western Reserve	63	63
Ohio State University.....	63	61
University of Oklahoma.....	54	23
University of Oregon.....	62	62
Hahnemann Medical College.....	130	102
Jefferson Medical College.....	120	120
Temple University	112	91
University of Pennsylvania.....	123	117
Woman's Medical College	22	15
University of	55	46
Medical College	45	..
University of Tennessee.....	110	61
McHarr Medical College.....	48	44
Vanderbilt University	54	54
Baylor University	64	28
University of Texas.....	85	62
University of Vermont.....	31	29
University of Virginia.....	54	26
Medical College of Virginia.....	74	61
University of Wisconsin.....	48	36
Marquette University	72	27
University of Alberta.....	37	10
University of Manitoba.....	62	23
Dalhousie University	41	..
Queen's University	42	5
University of Western Ontario.....	30	9
University of Toronto.....	153	29
McGill University	89	70
University of Montreal.....	54	36
Laval University	69	51
Totals.....	5,837	3,647

had baccalaureate degrees. Of the 138 graduates of the University of Toronto, 29 were reported as having an arts degree. A percentage of 62.4 of all graduates held degrees.

GRADUATES WITH B.S. IN MEDICINE DEGREE

The graduates of twenty-six medical schools in the United States and two in Canada received the Bachelor of Science in Medicine degree. There were 577 awarded in the United States and 2 in Canada. The largest single

group to receive this degree were 103 graduates of the medical school of the University of Minnesota, while the University of Illinois issued 95 degrees. Other schools granted fewer than 50. In 1940 the graduates of thirty schools in the United States and two in Canada

TABLE 22.—Students in the United States by Years, 1930-1940

	Preclinical		Clinical		Intern Year	Total
1930-1931	6,456	5,528	5,080	4,908	1,025	23,007
1931-1932	6,320	5,462	4,932	4,855	1,067	23,202
1932-1933	6,426	5,479	5,017	4,948	1,106	23,572
1933-1934	6,457	5,571	4,988	4,937	1,183	23,982
1934-1935	6,356	5,624	5,142	4,995	1,213	24,121
1935-1936	6,095	5,458	5,230	5,020	1,213	23,777
1936-1937	5,910	5,269	5,140	5,155	1,255	23,350
1937-1938	5,791	5,225	4,986	5,036	1,132	22,719
1938-1939	5,754	5,160	4,947	4,921	1,152	22,454
1939-1940	5,794	5,177	4,921	4,894	1,152	22,423
1940-1941	5,837*	5,254*	4,969*	4,849*	1,058	22,437

* Excluding enrolment figures for the two medical schools of the University of Chicago, i. e., Rush Medical College 212 and The School of Medicine 258, a total of 470

awarded 738 such degrees, whereas in 1941 twenty-six schools in the United States and two in Canada granted 577 degrees. Fifty-eight graduates of Canada obtained the degree in 1940 and only 2 in 1941. Schools in general are discontinuing the practice of issuing such degrees, while others have never done so.

STUDENTS BY CLASSES, 1930-1940

The number of students enrolled in preclinical and clinical classes in the medical schools of the United States for each session from 1930 to 1940 is presented in table 22. For the session 1940-1941 the attendance for the first preclinical year was 5,837. In the second preclinical year 5,254 were registered. In the clinical years 4,969 and 4,849 respectively were enrolled. The two medical schools of the University of Chicago are not operated under the promotion by class system and therefore the figures for enrolment at these schools are included only in the total column. At Rush Medical College and The School of Medicine of the University of Chicago there were 470 students enrolled during the session just closed, 212 and 258 respectively.

By comparison, it will be noted that the freshman class was increased by 243, the sophomore enrolment 77 and the junior class 48, while the senior registration was 45 fewer. The number interning as a requirement for the degree decreased 94. There was an increase in the total enrolment of all classes including the intern year of 14.

STUDENTS LEAVING SCHOOL DURING FIRST TWO YEARS

Of the 5,910 students selected for the freshman class of 1936-1937, 685 failed or withdrew during the first year and 278 more had dropped out by the end of the second medical year. A comparison of these figures with those for 1938-1939 is made in table 23.

While 156 fewer freshmen were enrolled in 1938-1939 than in 1936-1937, there were also 178 fewer students who had discontinued their course by the end of the second year. A decrease in the size of the entering class has not meant a corresponding reduction of the number of students in the clinical years. Further, the failure of 13 per cent of the students to continue beyond the second year suggests that many of those who were admitted lacked the ability to meet the exacting requirements of the medical curriculum.

FEES

The eighty-seven medical schools of the United States and Canada, including those offering courses in the basic medical sciences, have been grouped according to the tuition fees charged for the session 1940-1941 in table 24. An average was computed of the resident fees for each school. Three schools had fees under \$99. These were the Universities of North Dakota, Oklahoma and Texas. Twenty-two schools had fees of \$500 or more, namely the College of Medical Evangelists, Yale, George Washington, Georgetown, Loyola, Tulane, Johns Hopkins, Maryland, Tufts, St. Louis, Washington, Columbia, Cornell, Long Island, New York Medical, New York University, Syracuse, Buffalo, Cincinnati, Hahnemann, Pennsylvania and Pittsburgh. Thirty-three schools in the United States and five in Canada made an additional charge for nonresidents, ranging from \$50 each year by the Universities of Mississippi, Nebraska, Cincinnati and Virginia to \$400 exacted by Louisiana State University School of Medicine. Medical school fees have been increased, as can be noted by a comparison with earlier figures. In 1940 there were two schools in the first group, seven in the second, twenty-three in the third, fourteen in the fourth, twenty-five in the fifth and sixteen in the sixth group.

The lowest additional fee for nonresidents in the United States was \$50, and in Canada one school has a nonresident fee of \$5 for the first and \$10 for the second, third and fourth year. Fifteen schools have a nonresident fee of \$100 or less, eleven have fees between \$101 and \$200, nine from \$201 to \$300 and two from \$301 to \$400, while one school has a reciprocal fee for nonresidents.

TABLE 23.—Students Leaving School During First Two Years

	Class Entering 1936	Class Entering 1939
Freshman enrolment	5,910	5,754
Junior enrolment	4,947	4,929
Loss during first two years	963 —785	785
178 fewer students lost during first two years by the class entering in 1939		

TABLE 24.—Fees, 1940-1941

	Schools
Under \$99	3
\$100 to 199	8
200 to 299	20
300 to 399	15
400 to 499	19
500 or over	22
Total	87

Based on fees charged resident students.

The average resident fee charged in medical schools in the United States for the last session was \$386, whereas in 1940 it was \$378, in 1939 \$353 and in 1938 \$342.

CITIZENS OF THE UNITED STATES IN FACULTIES OF MEDICINE ABROAD

Beginning in 1931, citizens of the United States began to migrate to Europe to pursue medical courses. At one time reports indicated that there were approxi-

mately 1,500 such students. By 1939 there were at least 500, studying principally in the extramural schools of Scotland. Completion of the professional education of these students was interrupted by cancellation of passports to combat areas. Some students in the upper classes were permitted to return to complete their training and others went to Switzerland, where at that time visas were still obtainable. It is now impossible for students from this country to secure a medical education in any European country. This problem was considered by the Council on Medical Education and Hospitals at a meeting held in December 1939, and it was of the opinion that the granting of advanced standing on the basis of foreign credentials should be left to the discretion of each medical school. The records indicate that relatively few students have been accepted on this basis by the approved medical schools in this country.

The Council on Medical Education and Hospitals does not grade or classify medical schools outside the United States and Canada. No opportunity is afforded for visiting and inspecting such schools, nor are official reports received from them. The Council therefore has no evidence on which to base a rating. A list of foreign schools which has been published from time to time merely serves as a key to the American Medical Directory and indicates the names of the institutions which physicians now licensed to practice in the United States attended or from which they graduated. In the next edition, because of the inability to verify claims of foreign degrees, it is planned to indicate by the symbol ° that the information given is that furnished by the licensing board and that independent verification by the American Medical Association is lacking. It may be assumed that foreign degrees without this symbol have been officially verified.

DESCRIPTION OF MEDICAL SCHOOLS

ARKANSAS

Little Rock

UNIVERSITY OF ARKANSAS SCHOOL OF MEDICINE, 1209 McAlmont Street.—Organized in 1879 as the Medical Department of Arkansas Industrial University. Present title in 1899. In 1911 the College of Physicians and Surgeons united with it and it became an integral part of the University of Arkansas. The first class was graduated in 1880. Clinical teaching was suspended in 1918 but resumed in 1923. Coeducational since organization. The faculty consists of 29 professors and 128 lecturers and instructors, a total of 157. The curriculum covers four years of nine months each. Entrance requirements are two years of collegiate work. The B.S. Degree in Medicine is conferred at the end of the second year. The fees for the four years for residents of Arkansas are \$280 per year; nonresidents are charged \$225 additional each year. The registration for 1940-1941 was 286, graduates 70. The next session begins Oct. 1, 1941, and ends June 9, 1942. The Dean is Byron L. Robinson, M.D.

CALIFORNIA

Berkeley-San Francisco

UNIVERSITY OF CALIFORNIA MEDICAL SCHOOL, University Campus, Berkeley, Medical Center, San Francisco.—Organized in 1864 as the Toland Medical College. The first class graduated in 1864. In 1873 it became the Medical Department of the University of California. In 1909, by legislative enactment, the College of Medicine of the University of Southern California, at Los Angeles, became a clinical department but was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged, and elective chairs in homeopathic materia medica, and therapeutics were provided. Coeducational since organization. Three years of collegiate work are required for admission. The work of the first year is given at Berkeley and that of the last three years at San Francisco. The faculty is composed of 162 professors and 306 associates and assistants, a total of 468. The course covers four years of eight months each, and an additional fifth year consisting of an internship in a hospital or of special work in a department of the medical school. Fees for the four years, respectively, for residents of California are \$330, \$301, \$296 and \$296, nonresidents are charged \$300 additional each year. The registration for 1940-1941 was 239; graduates, 52. The next session begins Aug. 25, 1941, and ends May 23, 1942. The Acting Dean is President Robert G. Sproul, LL.D., Berkeley.

Loma Linda-Los Angeles

COLLEGE OF MEDICAL EVANGELISTS, Loma Linda, Boyle and Michigan Avenues, Los Angeles.—Organized in 1909. The first class graduated in 1914. The laboratory departments are at Loma Linda, the clinical departments at Los Angeles. Coeducational since organization. The faculty is composed of 47 professors and 325 associates, assistants and instructors, a total of 372. The course covers a period of four years of nine months each and an additional year consisting of an internship in an approved hospital. Three years of collegiate work are required for admission. The total fees are respectively, \$612, \$601, \$612 and \$612. The registration for 1940-1941 was 298, graduates, 91. The next session begins Sept. 1, 1941, and ends May 31, 1942. Because of the existing emergency a special session for one-fourth of the senior class has been arranged and began June 1 and ends Feb. 28. The President is Percy T. Maginn, M.D., Los Angeles. The Dean is E. H. Risley, M.D., Loma Linda; the Associate Dean is W. E. Macpherson, M.D., Los Angeles.

Los Angeles

UNIVERSITY OF SOUTHERN CALIFORNIA SCHOOL OF MEDICINE, 3551 University Avenue.—Organized in 1885 as the University of Southern California College of Medicine. First class graduated in 1888. In 1908,

it became the Los Angeles Medical Department of the University of California. In 1909 the College of Physicians and Surgeons, established in 1904, became the Medical Department of the University of Southern California. Its activities were suspended in 1920, reorganized in May 1928, under present title. The faculty consists of 155 professors and 198 instructors, assistants and others, a total of 353. An internship is required for graduation. Three years of collegiate work are required for admission. Coeducational since organization. Annual fees amount to \$452. The registration for 1940-1941 was 201, graduates, 49. The next session begins Sept. 22, 1941, and ends June 6, 1942. The Dean is Paul S. McKibben, Ph.D.

Stanford University-San Francisco

STANFORD UNIVERSITY SCHOOL OF MEDICINE, University Campus, Stanford University, 2398 Sacramento Street, San Francisco. The main buildings are in San Francisco. The laboratories of anatomy, bacteriology and experimental pathology, chemistry, and physiology are located on the campus at Stanford University, which is thirty miles southeast of San Francisco adjoining the City of Palo Alto. The post office is Stanford University. Organized in 1908, when by agreement the interests of Cooper Medical College were taken over. The first class graduated in 1913. Coeducational since organization. The faculty consists of 132 professors and 144 lecturers, assistants and others, a total of 276. Three years of collegiate work are required for admission. Beginning with session 1941-1942 the four quarter plan, it is expected, will be placed in operation for all classes, admitting one class each year. An internship is a requirement for graduation. The fees for the four years, respectively, are \$530, \$458, \$409 and \$409. The registration for 1940-1941 was 240, graduates, 61. During 1941-1942 the quarters begin September 23, January 5, March 31 and June 18 and ends December 16, March 20, June 10 and August 29. The Dean is Loren Roscoe Chandler, M.D.

COLORADO

Denver

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE, 4200 East Ninth Avenue.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine was merged, Jan. 1, 1911. Coeducational since organization. The faculty is composed of 57 professors and 130 lecturers, instructors and assistants, a total of 187. The course covers four years of nine months each. The entrance requirements are three years of collegiate work. The fees for residents of Colorado are, respectively, \$301, \$296, \$281 and \$281. Nonresidents are charged \$245 additional each year. The registration for 1940-1941 was 204, graduates, 45. The next session begins Sept. 24, 1941, and ends June 8, 1942. Advanced students admitted January 5 and March 23, 1942. The Dean is Maurice H. Rees, M.D.

CONNECTICUT

New Haven

YALE UNIVERSITY SCHOOL OF MEDICINE, 333 Cedar Street.—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812, instruction began in 1813; first class graduated in 1814. A new charter in 1879 changed the name to the Medical Department of Yale College. In 1884, the Connecticut Medical Society surrendered such authority as had been granted by the first charter. In 1887, Yale College became Yale University. Coeducational since 1916. The faculty consists of 176 professors and 233 lecturers and assistants, a total of 407. The requirements for admission are three years of collegiate work. The

course covers four years of nine months each. The fees are, respectively, \$505, \$500, \$500, and \$520. The registration for 1940-1941 was 206, graduates, 51. The next session begins Sept. 22, 1941, and ends June 10, 1942. The Dean is Francis G. Blake, M.D.

DISTRICT OF COLUMBIA

Washington

GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE, 3900 Reservoir Road, N.W.—Organized in 1851. First class graduated in 1852. The faculty is composed of 63 professors, 45 associate professors, 12 assistant professors, 5 adjunct professors, and 152 instructors, a total of 277. A baccalaureate degree is required for admission. The course of study covers four terms of eight and one-half months each. The present fees for each of the four sessions are \$500. The registration for 1940-1941 was 306; graduates, 73. The next session begins Sept. 18, 1941, and ends June 8, 1942. The Dean is David V. McCauley, S.J., Ph.D.

GEORGE WASHINGTON UNIVERSITY SCHOOL OF MEDICINE, 1335 H Street, N.W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name National Medical College. Classes were graduated in 1826 and in all subsequent years except in 1834 to 1838, and 1861 to 1863, inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1904, by an Act of Congress, the title of George Washington University was granted to the institution. Coeducational since 1884. The faculty is composed of 74 professors and 137 instructors, demonstrators and assistants, a total of 211. Two years of collegiate work are required for admission. Beginning with the session 1941-1942 the premedical requirement will be raised to three years. The course covers four years of thirty-six weeks each. The fees for each of the four years are \$550. The registration for 1940-1941 was 260; graduates, 59. The next session begins Sept. 22, 1941, and ends June 10, 1942. Because of the existing emergency a special session (optional) of the senior class has been arranged and began June 9 and ends February 22. The Dean is Walter A. Bloedorn, M.D.

HOWARD UNIVERSITY COLLEGE OF MEDICINE, Fifth and W Streets, N.W.—Chartered in 1867. Organized in 1869. The first class graduated in 1871. Coeducational since organization. Negro students compose a majority of those in attendance. The faculty comprises 34 professors and 75 instructors and assistants, a total of 109. The admission requirements are at least two years of collegiate work. The course covers four years of thirty-three weeks each. The fees are, respectively, \$269, \$269, \$259 and \$266. Registration for 1940-1941 was 151; graduates, 22. The next session begins Sept. 20, 1941, and ends June 5, 1942. The Dean is John Wesley Lawlah, M.D.

GEORGIA

Atlanta

EMORY UNIVERSITY SCHOOL OF MEDICINE, 50 Armstrong Street.—Organized in 1854 as the Atlanta Medical College. Classes graduated 1855 to 1861, when it suspended. Reorganized in 1865. A class graduated in 1865 and each subsequent year except 1874. In 1898 it merged with the Southern Medical College (organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with the Atlanta School of Medicine (organized in 1905), reassuming the name of Atlanta Medical College. Became the Medical Department of Emory University in 1915; assumed present title in 1917. Three years of collegiate work are required for admission. The faculty consists of 14 professors and 176 associates and assistants, a total of 190. The course of study is four years of thirty-two weeks each. The fees for each of the four years are \$338. The registration for 1940-1941 was 218, graduates, 54. The next session begins Sept. 25, 1941, and ends June 8, 1942. The Dean is Russell H. Oppenheimer, M.D.

Augusta

UNIVERSITY OF GEORGIA SCHOOL OF MEDICINE, University Place. Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. After 1873 it was known as the Medical Department of the University of Georgia. On July 1, 1933 the name was changed to the University of Georgia School of Medicine. Property transferred to the University in 1911. Classes were graduated in 1833 and all subsequent years except 1862 and 1863. Coeducation was begun in 1920. The faculty includes 59 professors and 35 assistants, a total of 94. Three years of collegiate work are required for admission. The course is four years of thirty-four weeks each. The fees for each of the four years are \$225 for residents of Georgia, and \$445 each year for nonresidents. The registration for 1940-1941 was 179, graduates 37. The next session begins Oct. 1, 1941, and ends June 15, 1942. The Dean is G. Lombard Kelly, M.D.

ILLINOIS

Chicago

LOYOLA UNIVERSITY SCHOOL OF MEDICINE, 706 South Wolcott Avenue.—Organized in 1913 by acquisition of Bennett Medical College which had been organized in 1869. Facilities enlarged upon by acquisition of Chicago College of Medicine and Surgery, faculties in basic medical sciences put on full time basis and present title assumed in 1917. Operated as an organic part of Loyola University. Co-educational since organization. Ninety semester hours is the minimum requirement for admission. The course of study is five years, including an internship. The faculty is composed of 32 full time professors and 201 other associate and assistant professors, associates, instructors and assistants, a total of 233. The fees

for each year are \$510, \$515, \$492 and \$521, respectively. The enrollment for 1940-1941 was 270; graduates, 107. Next session for juniors and seniors begins Sept. 8, 1941, for freshmen and sophomores, Sept. 15, 1941, and ends June 6, 1942. The Dean is Francis J. Braceland, M.D.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, 303 East Chicago Avenue.—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869 but retained the name of Chicago Medical College until 1891, when the present title was taken. Became an integral part of Northwestern University in 1905. Coeducational since 1926. The faculty comprises 29 professors, 126 associate and assistant professors and 361 associates, instructors and clinical assistants, a total of 516. The requirement for admission is three years of collegiate work. The B.S. degree in medicine may be conferred before the end of the senior year. The school operates on the four quarter plan. A hospital internship is required for graduation. The total fees are \$414 each year. The registration for 1940-1941 was 556; graduates, 134. During the academic year 1941-1942 the quarters begin October 1, January 5, March 30 and June 17, and end December 20, March 26, June 6 and August 29. The Dean is J. Roscoe Miller, M.D.

UNIVERSITY OF CHICAGO, THE SCHOOL OF MEDICINE, Fifty-Eighth Street and Ellis Avenue.—Organized in 1924, as a part of the Oslen Graduate School of Science of the University of Chicago. In 1937, when the University of Chicago reorganized its departments, the medical departments were included in the Biological Sciences Division. The work of the first two years in the medical courses has been given to the University Quadrangles since 1899; but the last two years were offered only at Rush Medical College which was affiliated with the university until 1927 when actual work in the clinical departments on the campus began. After that time, candidates for the degree of Doctor of Medicine could take the work of the first two years on the campus and the work of the third and fourth years either on the campus or at the Rush Medical College. Undergraduate courses in the clinical years at Rush Medical College will terminate in June 1942, when the students now enrolled will complete their studies. Thereafter all undergraduate instruction will be given only on the campus of the University. Rush Medical College will be affiliated with the University of Illinois College of Medicine. The faculty of the School of Medicine is composed of 105 professors, 173 associates, instructors and others, a total of 278. The requirements for admission are three years of collegiate work. The B.S. degree in medicine may be obtained during the second year. The curriculum covers twelve quarters of work. Freshmen are admitted in the fall quarter and advanced students in the spring and summer quarters. Sixty-five students are admitted to the first year class in each calendar year. The tuition fee for each of the four years is \$450. The registration for 1940-1941 was 258; graduates 42. During the academic year 1941-1942 the quarters begin June 24, October 7, January 5 and March 30, and end August 28, December 19, March 20 and June 17. All correspondence relating to general policies should be addressed to W. H. Taliaferro, Ph.D., Dean of the Division of Biological Sciences, or to A. C. Bachmeyer, M.D., Associate Dean, and that pertaining to student affairs to Victor Johnson, M.D., Dean of Medical Students.

RUSH MEDICAL COLLEGE, 1758 West Harrison Street.—Chartered in 1837 and taught first class in 1843. First class graduated in 1844. In 1887 the College became the medical department of Lake Forest University, retaining, however, its self-government. This relationship was dissolved in April 1898, and in the same month affiliation with the University of Chicago was established. After 1899 the first two years of the medical course were given on the university campus. Clinical years only were offered at Rush Medical College. In May 1924, under a new agreement, the University of Chicago took over the work of Rush Medical College as a department of the university. The faculty is composed of 138 professors, 163 associates, instructors and others, a total of 301. The tuition fee is \$450 yearly. The registration for 1940-1941 was 212; graduates, 94. The last session begins Sept. 29, 1941, and ends June 9, 1942. The school is in session all year except the month of September. By resolution of the board of trustees of the University of Chicago, undergraduate courses in the clinical years will terminate in June 1942, when the students now enrolled in these courses will have completed their studies. During 1940-1941 arrangements were entered into by the Trustees of Rush Medical College, the Trustees of the University of Chicago, the Trustees of the University of Illinois and the Board of Managers of the Presbyterian Hospital, whereby the University of Chicago returned to the Trustees of Rush Medical College the property and funds belonging to the College. An affiliation was effected between the Presbyterian Hospital and the University of Illinois. This affiliation provides for the teaching of undergraduate students of the University of Illinois in the wards of the Presbyterian Hospital and in the Central Free Dispensary, which now comes under the direction of the Board of Managers of the Presbyterian Hospital. The staff of the Presbyterian Hospital becomes members of the faculty of the medical school of the University of Illinois. A newly constituted Board of Trustees of Rush Medical College will continue to conserve the funds and property of Rush Medical College. This Rush Board retains the Rush charter and endowment of the Rush buildings and equipment and library and certain funds and the power to appoint a faculty as needed. The Rush buildings and equipment and library will be leased to the Presbyterian Hospital for a nominal sum. Under the proposed plan, Rush is at liberty to use its name with any postgraduate or graduate subject of research for which funds may be provided. The Acting Dean of Rush Medical College is Earle Gray, M.D.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE 1853 West Polk Street—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897. Relationship with the university was cancelled in June 1912, and was restored in March 1913, when the present title was assumed. Coeducational since 1898. Three years of collegiate work are required for admission. The curriculum covers four years of thirty-two weeks each and a year of internship in an approved hospital. Senior students enrolled during 1940-1941 were not required to comply with the intern requisite because of the national emergency. The B.S. degree in medicine is conferred at the end of the second year. The faculty is composed of 165 professors and 394 associates, instructors and assistants, a total of 559. The total fees for residents of Illinois are \$260 a year for students of the first and second years, \$310 for the third and fourth, similarly \$410 and \$460 a year for nonresident students. The registration for 1940-1941 was 616 graduates, 302. The next session begins Sept. 29, 1941, and ends June 12, 1942. The Dean is David J. Davis, M.D.

INDIANA

Bloomington-Indianapolis

INDIANA UNIVERSITY SCHOOL OF MEDICINE, Bloomington, 1040 West Michigan Street, Indianapolis—Organized in 1903 but did not give all the work of the first two years of the medical course until 1905. In 1907, by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879) merged into it. The first class was graduated in 1908. Coeducational since organization. The faculty consists of 270 professors, lecturers, associates and assistants. Three years of collegiate work are required for admission. The B.S. degree in medicine is conferred. The work of the first year is given at Bloomington and the work of the next three years at Indianapolis. The regular fee for the medical course for all four years is \$217 a year for residents of Indiana, and \$422 for nonresidents. The registration for 1940-1941 was 458, graduates, 98. The next session begins Sept. 15, 1941, and ends June 1, 1942. The Dean is Willis D. Gatch, M.D., Indianapolis.

IOWA

Iowa City

STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE, University Campus—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. Coeducational since 1870. The faculty is made up of 56 professors, 74 lecturers, demonstrators and assistants, a total of 130. Three years of collegiate work are required for admission. The B.A. degree in the combined course of liberal arts and medicine is conferred. The course of study covers four years of thirty-four weeks each. The tuition fee is \$226 each year for residents of Iowa and \$490 for nonresidents. The registration for 1940-1941 was 286, graduates, 80. The next session begins Sept. 25, 1941, and ends June 1, 1942. The Dean is Eben Murchison MacEwen, M.D.

KANSAS

Lawrence-Kansas City

UNIVERSITY OF KANSAS SCHOOL OF MEDICINE, Lawrence, 39th Street and Rainbow Boulevard, Kansas City—Organized in 1880. It offered only the first two years of the medical course until 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons founded in 1894, and the Medico-Chirurgical College, founded in 1897. Absorbed Kansas Medical College in 1913. The first class graduated in 1906. The clinical courses are given at Kansas City. Coeducational since 1880. The faculty includes 74 professors and 147 instructors, assistants and others, a total of 221. The requirement for admission is three years of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. The course covers four years of nine months each. The total fees for residents of the state are, respectively, \$159, \$170, \$165 and \$167. For nonresidents the fees are, respectively, \$269, \$345, \$415 and \$417. The registration for 1940-1941 was 289, graduates, 71. The next session begins Sept. 17, 1941, and ends June 8, 1942. The Dean is H. R. Wahl, M.D., Kansas City.

KENTUCKY

Louisville

UNIVERSITY OF LOUISVILLE SCHOOL OF MEDICINE, 101 West Chestnut Street—Organized in 1837 as Louisville Medical Institute. The first class graduated in 1838 and a class graduated each subsequent year except 1863. In 1846 the name was changed to University of Louisville Medical Department. In 1907 it absorbed the Kentucky University Medical Department, in 1908, the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. In 1922 it changed its name to the University of Louisville School of Medicine. Coeducational since organization. Two years of collegiate work are the minimum requirement for admission. Preference is given applicants with a degree or three college years leading to a degree. The faculty numbers 77 professors and 115 assistants, instructors and others, a total of 192. Course covers four years of thirty-two weeks each, exclusive of vacations and examinations. Fees are, respectively, \$450, \$450, \$450 and \$460. The registration for 1940-1941 was 345, graduates, 89. The next session begins Sept. 15, 1941, and ends June 2, 1942. The Dean is John Walker Moore, M.D.

LOUISIANA

New Orleans

LOUISIANA STATE UNIVERSITY SCHOOL OF MEDICINE, 1542 Tulane Avenue—Organized January 1931 as Louisiana State University Medical Center. Present title in 1939. Coeducational. First session October 1931, with students of first and third year. Faculty comprises 28 professors and 156 assistant professors, instructors and assistants, a total of 184. Course covers four years of no less than 32 weeks each. A minimum of three years' collegiate work is required for admission. Total fees, \$134 each year for residents of Louisiana, additional tuition of \$400 each year for nonresidents. The registration for 1940-1941 was 338, graduates, 73. The next session begins Sept. 8, 1941, and ends May 30, 1942. Because of the existing emergency a special session of the senior class has been arranged and began June 16 and ends February 14. The Dean is B. I. Burns, M.D.

TULANE UNIVERSITY OF LOUISIANA SCHOOL OF MEDICINE, 1430 Tulane Avenue—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years except 1863, 1865, inclusive. It became the Medical Department of the University of Louisiana in 1847, and in turn, the Medical Department of the Tulane University of Louisiana in 1884. Present title in 1913. Coeducational since 1915. The faculty comprises 30 professors and 222 associate and assistant professors, instructors and assistants, a total of 252. The course covers four years of thirty-two weeks each. A minimum of three years of collegiate work is required for admission. Total fees are, respectively, \$552, \$552, \$537 and \$547. The registration for 1940-1941 was 483, graduates, 121. The next session begins Sept. 25, 1941, and ends June 10, 1942. Because of the existing emergency, a special session (optional) of the senior class has been arranged and began June 16, students will be permitted to finish two months earlier but will graduate with the regular class. The Dean is Maxwell E. Latham, M.D.

MARYLAND

Baltimore

JOHNS HOPKINS UNIVERSITY SCHOOL OF MEDICINE, 710 North Washington Street—The nucleus of a Medical Faculty was constituted in 1883. Systematic postgraduate instruction in pathology and bacteriology was begun in 1886. School was fully organized and opened in 1893. The first class graduated in 1897. Coeducational since organization. The faculty consists of 71 professors and 417 instructors, assistants and others, a total of 488. The requirement for admission is a collegiate degree. The course extends over four years of eight and one-half months each. The total fees are, respectively, \$624, \$623, \$623 and \$623. The registration for 1940-1941 was 282, graduates, 72. The next session begins Sept. 23, 1941, and ends June 2, 1942. The Dean is Alvin M. Chesney, M.D.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE AND COLLEGE OF PHYSICIANS AND SURGEONS, Lombard and Greene Streets—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged with it in 1913. In 1915 the College of Physicians and Surgeons of Baltimore was merged and the present name assumed. Coeducational since 1918. The faculty consists of 45 professors and 267 associate and assistant professors and others, a total of 312. Three years of collegiate work are required for admission. The course covers four years of eight months each. The fees are, respectively, \$505, \$495, \$495, \$510 for residents of the state, for nonresidents the fees are \$150 additional each year. The registration for 1940-1941 was 369, graduates, 92. The next session begins Sept. 25, 1941 and ends June 6, 1942. The Acting Dean is H. Boyd Wylie, M.D.

MASSACHUSETTS

Boston

BOSTON UNIVERSITY SCHOOL OF MEDICINE, 80 East Concord Street—Organized in 1873 as a homeopathic institution. In 1874 the New England Female Medical College, founded in 1848, was merged into it. The first class was graduated in 1874. Became nonsectarian in 1918. Coeducational since organization. Three years of collegiate work are required for admission. The faculty includes 24 professors, 175 associates and others, a total of 199. The course covers four years. Total fees for each of the four years respectively, are \$479, \$475, \$475, \$490. The registration for 1940-1941 was 193, graduates, 33. The next session begins Sept. 18, 1941, for 1st, 2d and 3d year students, and Sept. 8, 1941, for 4th year students, and ends June 8, 1942. Because of the existing emergency a special session (optional) of the senior class has been arranged and began June 8 and ends March 1. The Dean is Bennett F. Avery, M.D.

HARVARD MEDICAL SCHOOL, 25 Shattuck Street—Organized in 1782. The first class graduated in 1788. It has a faculty of 168 professors and 470 other instructors and assistants, a total of 638. Two years of collegiate work are required for admission. The total fees for each of the four years are \$420, plus \$5 the first year for matriculation. The registration for 1940-1941 was 528, graduates 137. The next session begins Sept. 22, 1941, and ends June 18, 1942. Because of the existing emergency a special session (optional) of the senior class has been arranged and began June 1 and ends March 1. The Dean is C. Sidney Burwell, M.D.

TUFTS COLLEGE MEDICAL SCHOOL, 416 Huntington Avenue—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. Coeducational since 1894. It has a faculty of 91 professors and 284 assistant lecturers and others, a total of 375. A bachelor's degree is required for admission. The course covers four years of eight months each. The total fees for each of the four years

are \$512, \$507, \$507 and \$517. The registration for 1940-1941 was 386, graduates, 90. The next session begins Sept 24, 1941 and ends June 14, 1942. Because of the existing emergency, a special session (optional) of the senior class has been arranged and began June 1. Students will complete their work earlier but will graduate with the regular class in June. The Dean is A. Warren Stearns, M.D.

MICHIGAN

Ann Arbor

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed in 1915. Coeducational since 1870. It has a faculty of 25 professors, 21 associate professors, 25 assistant professors, 126 assistants, instructors and lecturers, a total of 197. The entrance requirements are ninety semester hours. The curriculum covers four years of nine months each. The total fees for Michigan students are \$250 for each of the four years respectively, for nonresidents \$400 a year. The registration for 1940-1941 was 460, graduates, 117. The next session begins Sept 29, 1941, and ends June 20, 1942. The Dean is A. C. Furstenberg, M.D.

Detroit

WAYNE UNIVERSITY COLLEGE OF MEDICINE, 1516 St. Antoine Street. Organized as the Detroit College of Medicine in 1885 by consolidation of Detroit Medical College, organized in 1868, and the Michigan College of Medicine organized in 1880. Reorganized with the title of Detroit College of Medicine and Surgery in 1913. The first class graduated in 1886. In 1918 it became a municipal institution under the control of the Detroit Board of Education. In 1934 the name was changed by action of the Detroit Board of Education to Wayne University College of Medicine as a part of the program of consolidation of the Detroit City Colleges into a university system. Coeducational since 1917. Entrance requirement is an academic degree or 90 semester hours of academic credit with "combined degree" guaranteed by school of arts and sciences. The faculty consists of 45 professors, 262 lecturers and others, a total of 307. The course covers four years of nine months each and a fifth year of intern work. The total fees for each of the first four years are, for Wayne County residents \$325 and for nonresidents outside of Wayne County \$425. The registration for 1940-1941 was 248, graduates 58. The next session begins September 15, 1941, and ends June 20, 1942. Because of the existing emergency a special session (optional) of the senior class has been arranged and began June 30 and ends February 28. The Dean is Edgar H. Norris, M.D.

MINNESOTA

Minneapolis

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL—Organized in 1883 as the University of Minnesota College of Medicine and Surgery, reorganized in 1888 by absorption of St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons organized in 1883 was merged. Present title in 1913. Coeducational since organization. The faculty includes 204 professors of whom 77 are on full time appointment and 127 on part time and 134 instructors, 29 of whom are on full-time appointment and 105 on part time, a total of 338. The curriculum covers four years of nine months each, and a year's internship in an approved hospital. The school is operated on the four-quarter plan. The entrance requirements are three years of university work which must include six semester credits of rhetoric, eight semester credits of physics, thirteen credits of general chemistry qualitative and quantitative analysis, organic and physical chemistry, eight credits of general zoology and genetics and eugenics, four credits of general psychology, and a reading knowledge of scientific German, with a 'C' average in all subjects and in the sciences. Students are required to meet the requirements for a degree of B.S. or B.A. before receiving the degree of Bachelor of Medicine (M.B.), which is granted at the end of the four-year course. The M.D. degree is conferred after a year of intern work, or of advanced laboratory work, or of public health work has been completed. Students are graduated at the end of any quarter in which work is completed and examinations passed. Total fees are \$256 for residents and \$412 for nonresidents each year of three quarters. The registration for 1940-1941 was 431, graduates 132. During the academic year 1940-1941 the quarters begin September 29, January 5, March 30 and June 17, and end December 18, March 18, June 12 and August 28. The Dean is Harold S. Diehl, M.D.

MISSOURI

St. Louis

ST. LOUIS UNIVERSITY SCHOOL OF MEDICINE, 1402 South Grand Boulevard. Organized in 1901 as the Marion Sims Beaumont Medical College by union of Marion Sims Medical College, organized in 1890, and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the Medical School of St. Louis University in 1903. The faculty is composed of 77 professors and 231 instructors and assistants, a total of 308. The completion of three years of college study is the minimum admission requirement but students presenting more than six credits in excess of the minimum are accepted by preference. The curriculum covers four years of thirty-two weeks each. The summer is optional and offers courses academically equivalent to those in the regular

session. The total fees are, respectively, \$530, \$525, \$525 and \$565. The registration for 1940-1941 was 421, graduates, 99. The next session begins Sept 23, 1941, and ends June 1, 1942. The Dean is Alphonse M. Schwitala, S.J., Ph.D.

WASHINGTON UNIVERSITY SCHOOL OF MEDICINE, Kingshighway and Euclid Avenue—Organized in 1842 as the Medical Department of St. Louis University. The first class graduated in 1843. In 1855 it was chartered as an independent institution under the name of St. Louis Medical College. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. Coeducational since 1918. The faculty comprises 131 professors and 260 lecturers, instructors and others, a total of 396. Four years of collegiate work are required for admission. The B.S. degree in medicine is conferred at the end of the third or fourth year. The course is four years of eight months each. The total fees are, respectively, \$523, \$518, \$518 and \$523. The registration for 1940-1941 was 351, graduates, 97. The next session begins Sept 25, 1941, and ends June 9, 1942. The Dean is Philip A. Shaffer, Ph.D.

NEBRASKA

Omaha

CREIGHTON UNIVERSITY SCHOOL OF MEDICINE, 306 North Fourteenth Street—Organized in 1892 as the John A. Creighton Medical College. The first class graduated in 1893. Present title in 1921. Coeducational since organization. It has a faculty of 75 professors and 76 instructors, lecturers and assistants, a total of 151. Three years of collegiate work required for admission. The B.S. degree in medicine is conferred at the end of the second year. The curriculum covers four years of eight months each. The total fees for the four years are, respectively, \$398, \$393, \$348 and \$356, and \$100 additional each year for students who have not taken the major part of their work at Creighton University School of Arts and Sciences. The registration for 1940-1941 was 223, graduates, 64. The next session begins Sept 23, 1941, and ends June 4, 1942. The Dean is Charles M. Wilhelm, M.D.

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE, Forty Second Street and Dewey Avenue—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska, with the present title. The instruction of the first two years was given at Lincoln and of the last two at Omaha until 1913, when the work of all four years was transferred to Omaha. Coeducational since 1882. The faculty is composed of 78 professors and 54 lecturers and instructors, a total of 132. Three years of collegiate work are required for admission. The B.S. degree in medicine is conferred at the end of the second year. The fees for the four years, respectively, are \$219, \$214, \$214 and \$214. The registration for 1940-1941 was 317, graduates, 77. The next session begins Sept 22, 1941, and ends June 8, 1942. The Dean is C. W. M. Poynter, M.D.

NEW YORK

Albany

ALBANY MEDICAL COLLEGE, 47 New Scotland Avenue—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915 Union University assumed educational control. Coeducational since 1915. The faculty is composed of 86 professors and 109 instructors, assistants and others, a total of 195. A collegiate degree is required for admission, however, students who have completed three years of college work and who have proper specific qualifications will be admitted. This change in the requirements for admission has been instituted for the duration of the present national emergency. The curriculum covers four years of eight months each. The total fees are respectively, \$555, \$530, \$515 and \$525. The registration for 1940-1941 was 140, graduates, 29. The next session begins Sept 8, 1941, and ends June 8, 1942. The Dean is R. S. Cunningham, M.D.

Brooklyn

LONG ISLAND COLLEGE OF MEDICINE, 350 Henry Street—Organized in 1858 as the Long Island College Hospital. The first class graduated in 1860 and the last class in 1930. Reorganized with a new charter in 1930 as the present institution. The first class graduated in 1931. Coeducational. It has a faculty of 119 professors, associate, assistant, clinical and assistant clinical professors, and 183 lecturers, associates, instructors, assistants and others, a total of 302. Ninety semester hours of collegiate work are required for admission. The course covers four years. The total fee for each of the four years is \$610. The registration for 1940-1941 was 365, graduates, 81. The next session begins Sept 15, 1941, for the fourth year and Sept 29, 1941, for the other years and ends June 9, 1942. The Dean is Jean Alonzo Curran, M.D.

Buffalo

UNIVERSITY OF BUFFALO SCHOOL OF MEDICINE, 24 High Street—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. Coeducational since organization. The faculty is composed of 94 professors and 192 associates, assistants and others, a total of 283. The minimum requirement for admission is two years of collegiate work including certain prescribed science courses. The course covers four years of eight months each. The total fees are respectively, \$530, \$525, \$520 and \$530. The registration for 1940-1941 was 266, graduates, 66. The next session begins Oct 1, 1941 and ends June 13, 1942. The Dean is Elward W. Kech, M.D.

New York

COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS, 630 West One Hundred and Sixty Eighth Street—The medical faculty of Columbia College, then known as King's College, was organized in 1767. Instruction was interrupted by the War of the Revolution. The faculty was reestablished in 1792 and merged in 1814 with the College of Physicians and Surgeons, which had received an independent charter in 1807. In 1860 the College of Physicians and Surgeons became the Medical Department of Columbia College. This merger became permanent by legislative enactment in 1891. Columbia College became Columbia University in 1896. The medical school has been coeducational since 1917. The faculty is composed of 280 professors and 592 instructors, demonstrators and others a total of 872. Three years of collegiate work are required for admission. The work covers four years of eight months each. The total fees are, respectively, \$545, \$530, \$530 and \$550. The registration for 1940-1941 was 411, graduates 104. The next session begins Sept. 18, 1941, and ends June 2, 1942. Because of the existing emergency a special session (optional) of the senior class has been arranged and began June 1 and will end in February. The Dean is Willard C. Rappleye, M.D.

NEW YORK MEDICAL COLLEGE FLOWER AND FIFTH AVENUE HOSPITALS, 1 East 105th Street—Organized in 1828. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title New York Homeopathic Medical College was assumed in 1869, the title New York Homeopathic Medical College and Hospital in 1887, the title New York Homeopathic Medical College and Flower Hospital in 1908, the title New York Medical College and Flower Hospital in 1936, the present title of New York Medical College Flower and Fifth Avenue Hospitals, June 22, 1938. The first class graduated in 1861. Coeducational since 1919. A baccalaureate degree or its equivalent required for admission. The course covers four years of eight months each. It has a faculty of 64 professors and associate professors, 39 assistant professors, and 250 lecturers and assistants a total of 353. The fees are, respectively, \$645, \$635, \$635 and \$665. The registration for 1940-1941 was 305, graduates, 67. The next session begins Sept. 13, 1941, and ends June 5, 1942. The Acting Dean is J. A. W. Hetrick, M.D.

NEW YORK UNIVERSITY COLLEGE OF MEDICINE, 477 First Avenue—The Medical Department of New York University (then called the University of the City of New York) was organized in 1841. In 1898 it united with the Bellevue Hospital Medical College, organized in 1861, under the name of University and Bellevue Hospital Medical College. In 1935 the name was changed to New York University College of Medicine. Coeducational since 1919. The faculty is composed of 163 professors, associate, assistant clinical and assistant clinical professors, and 377 lecturers, instructors and others, a total of 540. The course covers four years. Entrance requirements are that all candidates must have completed three full years of study in an approved college of arts and sciences. The fees for each of the four years are \$600. The registration for 1940-1941 was 499, graduates 122. The next session begins Sept. 17, 1941, and ends June 10, 1942. The Dean is Carrier McEwen, M.D.

CORNELL UNIVERSITY MEDICAL COLLEGE, 1300 York Avenue—Organized in 1898. Coeducational since organization. The first year was given to approximately one third of the class at Ithaca, but in 1938 this branch was discontinued and all work is now given in New York City. The faculty is composed of 152 professors and 315 assistants, lecturers, instructors and others a total of 467. All candidates for admission must be graduates of approved colleges or scientific schools or seniors of approved colleges that will permit them to substitute the first year of this medical school for the fourth year of their college course and will confer on them the baccalaureate degree on the completion of the first year's work. The fees are, respectively, \$620, \$610, \$615 and \$525. The registration for 1940-1941 was 294, graduates, 63. The next session begins Sept. 16, 1941, and ends June 10, 1942. The Dean is William S. Ladd, M.D.

Rochester

UNIVERSITY OF ROCHESTER SCHOOL OF MEDICINE AND DENTISTRY, 260 Crittenden Boulevard—Organized in 1925 as the Medical Department of the University of Rochester. Coeducational since organization. The faculty is composed of 64 professors, 220 lecturers, assistants, instructors and others, a total of 284. The work embraces a graded course of four years of nine months each. Three years of collegiate work are required for admission. The total fees for each year are \$500. The registration for 1940-1941 was 202, graduates 41. The next session begins Sept. 15, 1941, and ends June 13, 1942. The Dean is George Hoyt Whipple, M.D.

Syracuse

SYRACUSE UNIVERSITY COLLEGE OF MEDICINE, 766 Irving Avenue—Organized in 1872, when the Geneva Medical College chartered in 1834, was removed to Syracuse under the title 'The College of Physicians and Surgeons of Syracuse University'. Present title assumed in 1875, when a compulsory three year graded course was established. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Coeducational since organization. The faculty is composed of 48 professors and 181 associate and assistant professors, lecturers and instructors a total of 229. Three years of a recognized college course are required for admission. The course covers four years of thirty four weeks each. The fee for each of the first three years is \$600, for the fourth year, \$610. The enrollment for 1940-1941 was 164 graduates, 42. The next session begins Sept. 22, 1941, and ends June 8, 1942. The Dean is H. G. Weiskotten, M.D.

NORTH CAROLINA

Durham

DUKE UNIVERSITY SCHOOL OF MEDICINE—Organized in 1925. The first class was admitted, Oct. 1, 1930. Coeducational. The faculty is composed of 10 professors and 178 associate and assistant professors, lecturers, instructors and assistants, a total of 188. The entrance requirements are ninety hours of collegiate work. The academic year consists of four quarters of eleven weeks each. Students either may study four quarters each year after the first year, and if satisfactory will receive the M.D. certificate after three and one quarter calendar years, or three quarters in each year, and if satisfactory will be graduated after four calendar years. The B.S. degree in medicine may be conferred for special work after six quarters. Students are urged to spend three years in hospital or laboratory work after graduation and must give assurance satisfactory to the executive committee that they will spend at least two years. The fees are \$450 for each year of three quarters. The registration for 1940-1941 was 262, graduates, 65. During 1941-1942 the quarters begin October 2, January 5, March 30 and June 23 and end December 20, June 13, March 21 and September 5. The Dean is Wilbur C. Davison, M.D.

OHIO

Cincinnati

UNIVERSITY OF CINCINNATI COLLEGE OF MEDICINE, Eden and Bethesda Avenues—Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement, March 2, 1909, the Miami Medical College also merged with the University when the title of Ohio Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. Coeducational since organization. Candidates for admission to the freshman class must present three years of college preparation of not less than ninety hours. Liberal Arts students of the University of Cincinnati may sign up for the seven year combined Liberal Arts and Medical program. The B.Sc. degree is granted on the joint recommendation of the Faculties of the Colleges of Liberal Arts and Medicine at the end of the first medical year. The faculty consists of 112 professors, associate and assistant professors, 350 instructors, etc., a total of 462. The course covers four years of eight months each, on the completion of which the M.D. degree is granted. Beginning with the fall session of 1941-1942 the fees will be as follows: For legal residents of Cincinnati \$485 a year, plus breakage fees, (\$50 additional for those not legal residents of Cincinnati). The registration for 1940-1941 was 306, graduates 151. The next session begins Sept. 22, 1941, and ends June 5, 1942. Because of the existing emergency a special session (optional) of the senior class has been arranged and began June 23. Students will complete the required work in February but will graduate with the regular class in June. The Dean is Stanley Dorst, M.D.

Cleveland

WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE, 2109 Adelbert Road—Organized in 1843 as the Cleveland Medical College in cooperation with Western Reserve College. The first class graduated in 1844. It assumed the present title in 1881. In 1910 the Cleveland College of Physicians and Surgeons was merged. Coeducational since 1919. The faculty includes 87 professors and 236 lecturers, assistants and others, a total of 323. The curriculum covers three years of nine months each and one year of ten months. Three years of collegiate work are required for admission and a baccalaureate degree for graduation. The total fees are, respectively, \$553, \$537, \$516 and \$526. The registration for 1940-1941 was 282, graduates 63. The next session begins Sept. 25th, 1941, and ends June 17th, 1942. The Dean is Torald Sollmann, M.D.

Columbus

OHIO STATE UNIVERSITY COLLEGE OF MEDICINE, Neil and Eleventh Avenues—Organized in 1907 as the Starling Ohio Medical College by the union of Starling Medical College (organized in 1847 by charter granted by the State Legislature changing the name from Willoughby Medical College, which was chartered March 3, 1834) with the Ohio Medical University (organized 1890). In 1914 it became an integral part of the Ohio State University with its present title. Coeducational since organization. The faculty consists of 79 professors, associate and assistant professors, 77 lecturers, instructors, demonstrators and others, a total of 156. Three years of collegiate work are required for admission. The course covers four years of thirty four weeks each. Tuition fees are \$327 for the first year, and \$312 for each of the other three years for residents of Ohio and \$150 additional for nonresidents. The registration for 1940-1941 was 295, graduates, 68. The next session begins Sept. 30, 1941, and ends June 15, 1942. The Dean is Hardy A. Kemp, M.D.

OKLAHOMA

Oklahoma City

UNIVERSITY OF OKLAHOMA SCHOOL OF MEDICINE, 801 East Thirteenth Street—Organized in 1900. Until 1910 gave only the first two years of the medical course at Norman, Oklahoma, after which a clinical department was established at Oklahoma City by taking over the Medical School of Epworth University. The first class graduated in 1911. Coeducational since organization. Since September, 1928, the entire four year course has been given in Oklahoma City. It has a faculty of 28 professors, 27 associate professors, 20 assistant professors and 125 associate lecturers, visiting lecturers, instructors and assistants a total of 200. Three years

of college work are required for admission. The course covers four years of nine months each. Fees: \$50 "Maintenance and Incidental Fee" per semester. Other annual course fees average \$128, \$95, \$53, and \$58, in the order given, beginning with the freshman year. For students not residents of Oklahoma there is a tuition charge of \$400 a year, plus laboratory and course fees as indicated for the different years. The registration for 1940-1941 was 235; graduates 54. The next session begins Sept. 15, 1941, and ends June 8, 1942. The Dean is Robert U. Patterson, M.D.

OREGON

Portland

UNIVERSITY OF OREGON MEDICAL SCHOOL, Marquam Hill.—Organized in 1887. The first class graduated in 1888, and a class graduated each subsequent year except 1898. The Willamette University Medical Department was merged in 1913. Coeducational since organization. It has a faculty of 91 professors and 164 lecturers, assistants and others, a total of 255. Entrance requirements are three years of collegiate work. The course covers four years of thirty-three weeks each. The total fees are, respectively, \$380, \$375, \$370 and \$376 for residents of Oregon, and \$60 a year additional for nonresidents. The registration for 1940-1941 was 248; graduates, 62. The next session begins Oct. 2, 1941, and ends June 13, 1942. The Dean is Richard B. Dillehunt, M.D.

PENNSYLVANIA

Philadelphia

THE HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF PHILADELPHIA, 235 North Fifteenth Street.—Organized in 1848 as The Homeopathic Medical College of Pennsylvania. In 1869 it united with The Hahnemann Medical College of Philadelphia, taking the latter title. Assumed present title in 1885. The first class graduated in 1849. Coeducational beginning with 1941-1942 session. Three years of collegiate work in an approved college of arts and sciences are required for admission. It has a faculty of 80 professors and 158 lecturers, instructors, and others, a total of 238. The work covers four years of eight months each. Fees are, respectively, \$515, \$512, \$512 and \$535. The registration for 1940-1941 was 544; graduates, 130. The next session begins Sept. 22, 1941, and ends June 11, 1942. The Dean is William A. Pearson, M.D.

JEFFERSON MEDICAL COLLEGE OF PHILADELPHIA, 1025 Walnut Street.—Organized in 1825 as the Medical Department of Jefferson College, Canonsburg, Pa. It was chartered with its present title in 1838. Classes have been graduated annually beginning 1826. In 1838 a separate university charter was granted without change of title, since which time it has continued under the direction of its own board of trustees. It has a faculty of 79 professors, associate and assistant professors and 204 associates, lecturers, demonstrators and instructors, a total of 283. Four years of college work and a bachelor's degree are required for admission. The course of study covers four years of eight and one-half months each. The total fees are, respectively, \$455, \$440, \$430 and \$430. The registration for 1940-1941 was 508; graduates, 120. The next session begins Sept. 17, 1941, and ends June 5, 1942. The Acting Dean is Randle C. Rosenberger, M.D.

TEMPLE UNIVERSITY SCHOOL OF MEDICINE, 3400 North Broad Street.—Organized in 1901. The first class graduated in 1904. Coeducational since organization. The faculty numbers 33 professors and 223 associates, assistants and others, a total of 256. Three years of collegiate work are required for admission. The fees for each of the four years, respectively, are \$500, \$490, \$480 and \$500. The registration for 1940-1941 was 435; graduates, 112. The next session begins Sept. 17, 1941, and ends June 11, 1942. The Dean is William N. Parkinson, M.D.

UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE, Thirty-Sixth and Pine Streets.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772 and 1775-1779, inclusive. The original title was the Department of Medicine, College of Philadelphia. The present title was adopted in 1909. It granted the first medical diploma issued in America. In 1916 it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school. Coeducational since 1914. The faculty consists of 125 professors, associate and assistant professors, and 429 lecturers, associates, instructors and others, a total of 554. Three years of collegiate work are required for admission. The course covers four years of thirty-three weeks each. The tuition fee is \$500 each year, with a deposit fee of \$15, a general fee including student health of \$15 and a matriculation fee of \$5. The registration for 1940-1941 was 486; graduates, 125. The next session begins Sept. 22, 1941, and ends June 10, 1942. Because of the existing emergency, the senior year will begin September 2 and end before May 1. The Dean is William Pepper, M.D.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA, Henry Avenue and Abbottsford Road, East Falls.—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. It has a faculty of 77 professors and 64 assistants, lecturers and others, a total of 141. At least three years of collegiate work are required for admission and candidates with a degree are given preference. The curriculum covers four years of eight and one-half months each. Total fees are \$450 yearly. The registration for 1940-1941 was 115; graduates 23. The next session begins Sept. 17, 1941, and ends June 10, 1942. The Dean is Margaret D. Craighill, M.D.

Pittsburgh

UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE, Bigelow Boulevard.—Organized in 1886, as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh, removing to the university campus in 1910. The first class graduated in 1887. Coeducational since 1899. The faculty is composed of 30 professors and 348 associates, assistants and others, a total of 378. Entrance

requirements are two years of collegiate work. The course of study is four years of eight months each. The total fees are \$500 each year. The registration for 1940-1941 was 291; graduates, 55. The next session begins Sept. 22, 1941, and ends June 10, 1942. The Dean is W. S. McElroy, M.D.

SOUTH CAROLINA

Charleston

MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA, 16 Lucas Street.—Organized in 1823 as the Medical College of South Carolina. The first class graduated in 1825. In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they were merged in 1838. Classes were graduated in all years except 1862 to 1865, inclusive. In 1913, by legislative enactment, it became a state institution. Coeducational from 1895 to 1912, when privileges for women were withdrawn, being restored in 1917. It has a faculty of 49 professors and 42 associates, instructors and others, a total of 91. The course covers four years of eight months each. Three years of collegiate work are required for admission. The total fees are \$272 each year. Fees for nonresidents of the state, \$422 each year. The enrollment for 1940-1941 was 173; graduates, 45. The next session begins Sept. 25, 1941, and ends June 4, 1942. The Dean is Robert Wilson, M.D.

TENNESSEE

Memphis

UNIVERSITY OF TENNESSEE COLLEGE OF MEDICINE, 874 Union Avenue.—Organized in 1876 at Nashville as Nashville Medical College. First class graduated 1877, and a class graduated each subsequent year. Became Medical Department of University of Tennessee in 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor. In 1911 it moved to Memphis, where it united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913. Lincoln Memorial University Medical Department was merged in 1914. Coeducational since 1911. The faculty includes 106 professors and 146 assistants, instructors and others, a total of 252. Two years of collegiate work are required for admission. The B.S. degree in medicine is conferred at the end of the second year. The fees are \$120 quarterly. For residents of the state the charge is reduced \$50 each quarter. The registration for 1940-1941 was 461; graduates, 110. During the academic year of 1941-1942 the quarters begin July 8, Sept. 25, Jan. 2, and March 23, and end Sept. 24, Dec. 13, March 21 and June 10. The Dean is O. W. Hyman, Ph.D.

Nashville

MEHARRY MEDICAL COLLEGE, Eighteenth Avenue North and Heffernan Street. (For Negro Youth).—This school was organized in 1876 as the Meharry Medical Department of Central Tennessee College, which became Walden University in 1900. First class graduated in 1877. Obtained new charter independent of Walden University in 1915. Coeducational since 1876. The faculty is made up of 49 professors and 30 instructors and lecturers, a total of 79. Three years' work in a college of liberal arts is required for admission. The curriculum covers four years of thirty-two weeks each. Tuition fees are, respectively, \$300, \$290, \$280 and \$295 each year. The registration for 1940-1941 was 216; graduates, 48. The next session begins Oct. 1, 1941, and ends May 26, 1942. The Dean is Edward L. Turner, M.D.

VANDERBILT UNIVERSITY SCHOOL OF MEDICINE, Twenty-First Street at Edgemoor.—This school was founded in 1874. The first class graduated in 1875. Coeducational since September 1925. The faculty numbers 243. For matriculation, students must be graduates of collegiate institutions of recognized standing or seniors in absentia, who will receive the bachelor degree from their college after having completed successfully at least one year of work in the school of medicine. The course covers four years of nearly nine months each. The total fees are, respectively, \$465, \$465, \$465 and \$470. The registration for 1940-1941 was 206; graduates, 54. The next session begins Sept. 22, 1941, and ends June 10, 1942. The Dean is Waller S. Leathers, M.D.

TEXAS

Dallas

BAYLOR UNIVERSITY COLLEGE OF MEDICINE, 810 College Avenue.—Organized in 1900 as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University. It acquired the charter of Dallas Medical College in 1904. Coeducational since organization. The first class graduated in 1901. The faculty consists of 119 professors and 112 instructors and assistants, a total of 231. Entrance requirements are three years of collegiate work. The course covers four years of eight months each. The fees are, respectively, \$419, \$409, \$399 and \$424. The registration for 1940-1941 was 306; graduates, 64. The next session begins Sept. 29, 1941, and ends June 1, 1942. The Dean is W. H. Moursund, M.D.

Galveston

UNIVERSITY OF TEXAS MEDICAL BRANCH, 912 Avenue B. Organized in 1891. The first class graduated in 1892. Coeducational since organization. It has a faculty of 40 professors and 107 instructors and assistants, a total of 147. Beginning with the 1941-1942 session the curriculum was changed to the four quarter plan, each quarter lasting eleven weeks. The total fees are, respectively, \$46, \$27, \$39 and \$37. Included

in this is a matriculation fee of \$17 per quarter. The registration for 1940-1941 was 382; graduates, 85. During 1941-1942 the quarters begin June 16, Oct. 1, Jan. 2 and March 26 and end Aug. 31, Dec. 20, March 19 and June 9. The Dean is John W. Spies, M.D.

VERMONT Burlington

UNIVERSITY OF VERMONT COLLEGE OF MEDICINE, Pearl Street, College Park.—Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. Coeducational since 1920. It has a faculty of 64 professors and 54 instructors, and assistants, a total of 118. Three years of collegiate work are required for admission. The course of study covers three years of nine months each and a fourth year of eleven months. For residents of Vermont the tuition fee is \$400 each session. Nonresidents are charged an additional \$150 each session. A \$25 fee is charged for the doctor's degree. The registration for 1940-1941 was 124; graduates, 31. The next session begins Sept. 19, 1941, and ends June 15, 1942. The Chairman of the Administrative Committee is Clarence H. Beecher, M.D.

VIRGINIA Charlottesville

UNIVERSITY OF VIRGINIA DEPARTMENT OF MEDICINE.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. Coeducational since the session of 1920-1921. It has a faculty of 45 professors and 41 lecturers, instructors, assistants and others, a total of 86. Three years of college work are required for admission. For residents of Virginia the total fees are, respectively, \$419, \$401, \$366 and \$366. Nonresidents are charged an additional \$50 each year. The registration for 1940-1941 was 250; graduates, 54. The next session begins Sept. 18, 1941, and ends June 15, 1942. The Dean is Harvey Ernest Jordan, Ph.D.

Richmond

MEDICAL COLLEGE OF VIRGINIA, Twelfth and Marshall Streets.—Organized in 1838 as the Medical Department of Hampden Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was merged. In 1914 the North Carolina Medical College was merged. Coeducational since 1918. Classes were graduated in 1839 and in all subsequent years. It has a faculty of 81 professors and 147 lecturers, instructors and others, a total of 228. Three years of collegiate work are required for admission. The course covers four years of eight and one-half months each. Total fees are, respectively, \$379, \$379, \$379 and \$381. Nonresidents are charged an additional \$125 each year. The registration for 1940-1941 was 295; graduates, 74. The next session begins Sept. 2, 1941, for the first year class; Sept. 15, 1941, for all other classes, and ends June 2, 1942. The Dean is Lee E. Sutton Jr., M.D.

WISCONSIN

Madison

UNIVERSITY OF WISCONSIN MEDICAL SCHOOL, 408 North Charter Street.—Organized in 1907. Gave only the first two years of the medical course until 1925, when the clinical years were added. Coeducational since organization. Three years of collegiate work are required for admission. The B.S. degree in medical science is conferred at the end of the first year. It has a faculty of 64 professors and 67 lecturers, instructors and others, a total of 131. The fees are, respectively, \$222, \$212, \$182 and \$120. An additional fee of \$200 each year is charged nonresidents. The registration for 1940-1941 was 258; graduates, 48. The next session begins Sept. 24, 1941, and ends June 22, 1942. The Dean is William S. Middleton, M.D.

Milwaukee

MARQUETTE UNIVERSITY SCHOOL OF MEDICINE, 561 North Fifteenth Street.—Organized in December 1912, by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. Coeducational since organization. It has a faculty of 173. Three years of collegiate work are required for admission. The curriculum covers four years of eight and a half months each, and one year's internship in an approved hospital. The fees are as follows: first year, \$462; second year, \$450; third year, \$450; fourth year, \$400. The registration for 1940-1941 was 312; graduates, 72. The next session begins Sept. 29, 1941, and ends June 10, 1942. The Dean is Eben J. Carey, M.D.

CANADA

Alberta

UNIVERSITY OF ALBERTA FACULTY OF MEDICINE, Edmonton.—Organized in 1913. Coeducational since organization. Has given the complete six-year medical course since 1924. The Faculty includes 23 full time and 45 part time professors, instructors, assistants and others, a total of 68. Tuition for the second, third and fourth years is \$215, for the fifth and sixth years \$225. The registration for 1940-1941 was 201; graduates, 37. The next session begins Sept. 26, 1941, and ends April 10, 1942. Special session advancement of graduating class only, for military service, begins July 2, 1941, ends Feb. 28, 1942. The Acting Dean is John James Ower, M.D.

Manitoba

UNIVERSITY OF MANITOBA FACULTY OF MEDICINE, Bannatyne Avenue, Winnipeg. Organized in 1883 as Manitoba Medical College; first class graduated in 1886, and a class graduated each subsequent year. The

college transferred all its property to the University of Manitoba in 1919 and assumed the present title. Coeducational since organization. The faculty includes 26 professors and 80 instructors and assistants, a total of 106. Matriculation requirements include two years of collegiate work in the faculty of arts and science of a recognized university. The course extends over four years of eight months each and a hospital internship. The total fees are, respectively, \$298, \$293, \$303, \$303, \$77. The registration for 1940-1941 was 217; graduates, 62. The next session begins Sept. 12, 1941, and ends May 13, 1942. The Dean is A. T. Mathers, M.D.

Nova Scotia

DALHOUSIE UNIVERSITY FACULTY OF MEDICINE, Morris Street, Halifax.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty, separate from the Halifax Medical College, in 1885. In 1911, in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College, the work of the latter institution was discontinued and a full teaching faculty was established by the university. First class graduated in 1872. Coeducational since 1871. It has a faculty of 32 professors and 27 demonstrators, lecturers and others, a total of 59. Requires for matriculation two years of arts. The medical course covers four years and a hospital internship of one year. The fees are \$317, \$322, \$317, \$307 and \$307 for each year, respectively; \$250 additional registration fee payable by students outside the British Empire. The registration for 1940-1941 was 177, graduates, 41. The next session begins Sept. 9, 1941, and ends May 12, 1942. The Dean is H. G. Grant, M.D.

Ontario

QUEEN'S UNIVERSITY FACULTY OF MEDICINE, Kingston.—Organized 1854, first class graduated in 1855, and a class graduated each subsequent year. The faculty numbers 60. The fee for the first year is \$233 and \$255 for each of the other five years. The course covers six years of thirty teaching weeks each. The registration for 1940-1941 was 266; graduates, 42. The next session begins Sept. 25, 1941, and ends May 15, 1942. The Dean is Frederick Etherington, M.D.

UNIVERSITY OF TORONTO FACULTY OF MEDICINE, Toronto.—Organized in 1843 as the Medical Faculty of King's College. Abolished in 1853. Reestablished in 1887. In 1902 it absorbed Victoria University Medical Department, and in 1903 it absorbed the Medical Faculty of Trinity University. Coeducational since 1903. The course of study covers six years of eight months each. The B.Sc. (Med.) degree is conferred at the end of the third or sixth year. It has a faculty of 83 professors and 337 lecturers, associates and others, a total of 420. The fees are \$226 for the first year; for the second, \$389; \$296 for the third year, \$321 for the fourth and fifth years, and \$353 for the sixth year. The registration for 1940-1941 was 747; graduates, 138. As there is a shortage of doctors in Canada, both for the armed forces and for civilian needs, the duration of the academic session of the Faculty of Medicine, University of Toronto, has been increased to ten months extending from Aug. 25, 1941, to June 27, 1942. The final year class will graduate in April, 1942 and every eight months thereafter. The next session begins Aug. 25, 1941, and ends June 27, 1942. The Dean is W. E. Gallie, M.D.

UNIVERSITY OF WESTERN ONTARIO MEDICAL SCHOOL, Orlow Avenue, London.—Organized in 1881 as the Western University Faculty of Medicine; first class graduated in 1883, and a class graduated each subsequent year. Present title in 1923. The medical school has been under the control of the Board of Governors of the University of Western Ontario since 1913. Coeducational since 1913. The faculty numbers 89. The course of study covers six years of eight months each. The total fees to residents of Canada for the last four years, respectively, are \$349, \$345, \$353 and \$291; nonresidents are charged \$637, \$633, \$641 and \$516 for each of the last four years. The registration for 1941-1942 was 222; graduates, 30. Owing to war conditions, the next session begins for the sixth year July 2, 1941, and ends Feb. 28, 1942. Classes for the second, third, fourth and fifth years begin Aug. 25, 1941, and end June 27, 1942. The Dean is F. J. H. Campbell, M.D.

Quebec

LAVAL UNIVERSITY FACULTY OF MEDICINE, Quebec.—The Quebec School of Medicine, organized in 1848, became in 1852 the Laval University Faculty of Medicine; first class graduated in 1855, and a class graduated each subsequent year. The faculty numbers 89. The fees for each of the medical years are \$175 for residents of Canada. Nonresidents are charged an extra fee of \$175 each year. The premedical requirement is a B.A. degree or its equivalent. The registration for 1940-1941 was 315; graduates, 69. The next session begins Sept. 10, 1941, and ends May 30, 1942. The Dean is Charles Vézina, M.D.

MCGILL UNIVERSITY FACULTY OF MEDICINE, 3640 University Street, Montreal.—Founded in 1823 as Montreal Medical Institution; became the Medical Faculty of McGill University in 1829; first class graduated under the university auspices in 1833. No session between 1836-1839, owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop's College. Coeducational since 1919. Three years of collegiate work are required for admission. The M.D. is conferred upon the completion of four sessions of 36 teaching weeks. The faculty consists of 58 professors and 183 lecturers and others, a total of 246. The total fee for each of the four medical years are \$391 plus \$100 for non-British subjects. The registration for 1940-1941 was 385; graduates, 89. The next session begins Sept. 3, 1941, and ends May 31, 1942. The Dean is J. C. Meakins, M.D.

UNIVERSITY OF MONTREAL FACULTY OF MEDICINE, 1265 St Denis Street, Montreal—Organized in 1843 as the Montreal School of Medicine and Surgery. In 1891, by Act of Parliament, the Medical Faculty of Laval University (organized in 1878) was absorbed. Present name by Act of Parliament in 1920. A class was graduated in 1843 and each subsequent year. Coeducational since 1925. The faculty numbers 140. The

BA or BS degree, or its equivalent, is a prerequisite to the premedical year, which precedes a five year medical course, the fifth year being a compulsory internship year. The total fees for each of the five years respectively are \$245, \$229, \$271, \$235, \$218. The registration for 1941-1942 was 203, graduates, 54. The next session begins Sept 13, 1941, and ends June 15, 1942. The Dean is Albert LeSage, M.D.

DESCRIPTION OF SCHOOLS OF THE BASIC MEDICAL SCIENCES

ALABAMA

University (Tuscaloosa)

UNIVERSITY OF ALABAMA SCHOOL OF MEDICINE—Organized in 1859 at Mobile as the Medical College of Alabama. Classes graduated in 1861 and subsequent years excepting 1862 to 1868, inclusive. Reorganized in 1897 as the medical department of the University of Alabama. Present title assumed in 1907, when all property was transferred to the University of Alabama. In 1920 clinical teaching was suspended and the medical school was removed to the university campus near Tuscaloosa. Coeducational since 1920. Minimum entrance requirements are three years of collegiate work. The course of study covers two years of thirty-six weeks each. The faculty includes 15 professors and 14 instructors, assistants, and others, a total of 29. The tuition fees are \$301 each year plus \$75 differential for nonresidents. Each class is limited to fifty students. The registration for 1940-1941 was 101. The next session begins Sept 10, 1941, and ends May 27, 1942. The Dean is Stuart Graves, M.D.

MISSISSIPPI

University

UNIVERSITY OF MISSISSIPPI SCHOOL OF MEDICINE—Organized in 1903. Coeducational since organization. Gives only the first two years of the medical course. A clinical department was established at Vicksburg in 1908 but was discontinued in 1910 after graduating one class. The session extends over eight and one-half months. Entrance requirement is three years of collegiate work. The BS degree in medicine is conferred at the end of the second year. The faculty includes 8 professors, 2 assistant professors, 1 associate professor, 1 adjunct professor, 20 instructors, assistants and others, a total of 32. The total fees for the first year are \$353, and for the second year \$325. The nonresident fee is \$50 additional each year. The registration for 1940-1941 was 46. The next session begins Sept 18, 1941, and ends June 1, 1942. The Dean is B. S. Guyton, M.D.

MISSOURI

Columbia

UNIVERSITY OF MISSOURI SCHOOL OF MEDICINE—Organized at St. Louis in 1845, was discontinued in 1855 but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. Coeducational since 1872. The faculty includes 21 professors and 14 instructors, lecturers and others, a total of 35. The entrance requirements are 90 semester hours of collegiate work. The BS degree in medicine is conferred at the end of the second year. Total fees for the first year are \$191, for the second, \$177. The registration for 1940-1941 was 83. The next session begins Sept 15, 1941, and ends June 12, 1942. The Dean is Dudley S. Conley, M.D.

NEW HAMPSHIRE

Hanover

DARTMOUTH MEDICAL SCHOOL—Organized by Dr. Nathan Smith in 1797. The first class graduated in 1798. It is under the control of the trustees of Dartmouth College. Courses of the third and fourth year were discontinued in 1914. The faculty consists of 21 professors and 11 instructors, a total of 32. Three years of collegiate work and candidacy for the bachelor's degree are required for admission. The course covers nine calendar months in each year, or eight months of actual teaching. Candidates for the A.B. degree in Dartmouth College may substitute the work of the first year in medicine for that of the senior year in the academic department. The tuition is \$450 for each year. The registration for 1940-1941 was 41. The next session begins Sept 17, 1941, and ends June 14, 1942. The Dean is John P. Bowler, M.D.

NORTH CAROLINA

Chapel Hill

UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department in Raleigh. The first class graduated in 1903. A class was graduated each subsequent year, including 1910 when the clinical department at Raleigh was discontinued. Coeducational since 1914. A minimum of three years of college work is required for admission. Certificates are awarded on the completion of the two years' work in medicine. The faculty is composed of 16 professors and 13 instructors, a total of 29. The fees for each year are \$300 for residents, for nonresidents an additional fee of \$100. The registration for 1940-1941 was 78. The next session begins Sept 23, 1941, and ends June 9, 1942. The Acting Dean is W. Reece Berryhill, M.D.

Winston-Salem

WAKE FOREST COLLEGE SCHOOL OF MEDICAL SCIENCES formerly at Wake Forest, N. C. has been moved to Winston-Salem, N. C. and will hereafter be known as the BOWMAN GRAY SCHOOL OF MEDICINE OF

WAKE FOREST COLLEGE. Organized in 1902 as a part of Wake Forest College. The Board of Trustees has authorized the extension of the curriculum to include four years of instruction leading to the degree of doctor of medicine. The new plant in Winston-Salem is under the care of as the North Carolina Baptist Hospital. The faculty numbers 22 professors and 80 assistant professors, instructors, assistants and lecturers making a total of 102. Ninety semester hours of college work are required for admission. The BS degree is given after the completion of the first year to those not already holding that degree. Each academic year extends over nine months. Tuition for each academic year is \$100. Registration for the year 1940-1941 was 66. The next session begins Sept 10, 1941, and ends June 1, 1942. The Dean is C. C. Carpenter, M.D.

NORTH DAKOTA

Grand Forks

UNIVERSITY OF NORTH DAKOTA SCHOOL OF MEDICINE—Organized in 1905. Offers only the first two years of the medical course. Coeducational since organization. Three years' work in a college of liberal arts is required for admission. The BS degree in combined arts and medical course is conferred at the end of the second year. The faculty consists of 8 professors and 8 instructors, a total of 16. The fees are \$80 each year for resident students and \$165 for nonresidents. The registration for 1940-1941 was 47. The next session begins Sept 16, 1941, and ends June 9, 1942. The Dean is H. E. French, M.D.

SOUTH DAKOTA

Vermillion

UNIVERSITY OF SOUTH DAKOTA SCHOOL OF MEDICAL SCIENCES—Organized in 1907 as the University of South Dakota School of Medicine. Present title in 1937. Coeducational since organization. Offers only the first two years of the medical course. Three years' work in a college of liberal arts is required for admission. Students who complete the third year of premedical work in the College of Arts and Sciences at the University of South Dakota may apply the work of the first year of medicine to the A.B. degree. The BS degree is conferred at the end of the second year on those students who do not hold a combination (Arts and Sciences and Medicine Course) A.B. degree. The faculty numbers 18. The tuition is \$150 each year for residents and \$250 for nonresidents. The registration for 1940-1941 was 45. The next session begins Sept 18, 1941, and ends June 8, 1942. The Dean is Joseph C. Ohlmacher, M.D.

UTAH

Salt Lake City

UNIVERSITY OF UTAH SCHOOL OF MEDICINE, University Street—Organized in 1906. Coeducational since organization. Gives only first two years of medical course. Each school year covers thirty-six weeks. Three years of collegiate work are required for admission. The medical faculty consists of 11 professors, 1 instructor, 21 lecturers and demonstrators, and 5 fellows, assistants, and technicians, a total of 38. The fees for each year are \$229. There is a nonresident fee of \$75 each year. The registration for 1940-1941 was 63. The next session begins Sept 29, 1941, and ends June 5, 1942. The Dean is L. L. Daines, M.D.

WEST VIRGINIA

Morgantown

WEST VIRGINIA UNIVERSITY SCHOOL OF MEDICINE—Organized in 1902, gives the first two years of the medical course. Coeducational since organization. Three years of collegiate work are required for admission. The BS degree in medicine is conferred at the end of the second year. Session extends through nine months. Faculty numbers 24. Fees for residents of the state are, respectively, \$254 and \$264; nonresidents \$150 additional each year. The registration for 1940-1941 was 45. The next session begins September 18, 1941, and ends June 8, 1942. The Dean is Edward J. Van Lier, M.D.

CANADA

Saskatchewan

UNIVERSITY OF SASKATCHEWAN SCHOOL OF MEDICAL SCIENCES Saskatoon—Organized in 1926. Coeducational. Offers the first two years of the medical course. Two years of collegiate work are required for admission. The BA degree is conferred at the end of the second year. The medical faculty includes 7 professors and 4 lecturers and assistants, a total of 11. The fees are \$150 for each year. The registration for 1940-1941 was 49. The next session begins Sept 22, 1941, and ends May 8, 1942. The Dean is W. S. Lindsay, M.D.

GRADUATE MEDICAL EDUCATION

Internships and Residencies

The work of the Council in the field of internships and residencies is commented on at length in the Hospital Number of THE JOURNAL.¹ Two very timely subjects are presented in this issue because of their current interest.

NECROPSY PERFORMANCE

The list of hospitals approved for intern training which achieved the commendable record of necropsies in 70 per cent or more of their cases of death is

Hospitals in Which Necropsies Exceeded Seventy per Cent of Fatalities

	Control	Necropsy Percent	Page
1. Research and Educational Hospital, Chicago.....	State	86.7	
2. University of Nebraska Hospital, Omaha.....	State	85.9	
3. Letterman General Hospital, San Francisco.....	Army	85.7	
4. Station Hospital (Fort Sam Houston), San Antonio, Texas.....	Army	85.7	
5. Beverly Hospital, Beverly, Mass.....	NPAssn	85.1	
6. Colorado General Hospital, Denver.....	State	83.8	
7. Walter Reed General Hospital, Washington, D. C.....	Army	82.4	
8.	Church	82.2	
9.	Church	79.3	
10.	State	79.2	
11. Evanston Hospital, Evanston, Ill.....	NPAssn	78.8	
12. Triality Hospital, Alton, N. D.....	Church	78.8	
13. Hosp. of the Protestant Episcopal Church, Philadelphia.....	Church	78.4	
14. University of Chicago Clinics, Chicago.....	NPAssn	78.2	
15. Kansas City General Hospital No. 1, Kansas City, Mo.....	City	78.1	
16. U. S. Naval Hospital, San Diego.....	Navy	77.7	
17. Mary Hitchcock Memorial Hospital, Hanover, N. H.....	NPAssn	77.0	
18. Columbus Hospital, Chicago.....	Church	77.3	
19. Santa Barbara Cottage Hospital, Santa Barbara, Calif.....	NPAssn	76.5	
20. St. Luke's Hospital, Kansas City, Mo.....	Church	76.2	
21. U. S. Naval Hospital, Washington, D. C.....	Navy	76.0	
22.	NPAssn	76.0	
23.	Army	75.5	
24.	State	74.7	
25.	Church	74.3	
26. U. S. Marine Hospital, Norfolk, Va.....	USPHS	74.0	
27. Santa Barbara General Hospital, Santa Barbara, Calif.....	County	73.8	
28. St. Joseph's Hospital, Kansas City, Mo.....	Church	73.7	
29. Hospital for Children, San Francisco.....	NPAssn	73.6	
30. U. S. Marine Hospital, Seattle.....	USPHS	72.9	
31. Albany Hospital, Albany, New York.....	NPAssn	72.8	
32. Queen's Hospital, Honolulu, Hawaii.....	NPAssn	72.6	
33. Johns Hopkins Hospital, Baltimore.....	NPAssn	72.6	
34. Strong Memorial and Rochester Municipal Hospitals, Rochester, N. Y.....	NPAssn	72.6	
35. Wesley Memorial ..	Church	72.2	
36. Harris Memorial ..	Church	72.2	
37. Touro Infirmary, New Orleans.....	NPAssn	71.2	
38. Montefiore Hospital for Chronic Diseases, New York.....	NPAssn	71.0	
39. St. Luke's Hospital, Chicago.....	NPAssn	70.8	
40. Passavant Memorial Hospital, Chicago.....	NPAssn	70.2	

presented herewith. It will be noted that the list contains the names of forty institutions, an increase of eleven over the previous high reported in 1940.² It

Continuation Study for Practicing Physicians in the United States, 1940-1941

Since 1937 the Council on Medical Education and Hospitals has been actively engaged in the collection of information on the facilities available throughout the United States for continuation study. Progress reports on this survey appeared in the Educational Number of THE JOURNAL of 1938,³ 1939⁴ and 1940.⁵ A review of the developments and of the accomplishments in this phase of graduate medical education was published in composite form by the Council in May 1940.⁶ The

is especially gratifying that small as well as large institutions have manifested this interest in educational work and that the list includes non-tax supported as well as public hospitals. In the group are institutions which are, not connected with medical schools and also hospitals sponsored by various religious denominations.

INTERNS AND RESIDENTS ENTERING MILITARY SERVICE 1940-1941

Late in June and early in July of this year the Council sent a questionnaire to one thousand and forty-three hospitals approved for intern training, residency training or both. All approved hospitals except those operated by the Army and Navy were included. Returns were received from nine hundred and seventy institutions, or 93 per cent. The questions concerned the induction of interns and residents into active military service by order of local Selective Service boards and the interns and residents holding commissions in the Medical Reserve Corps of the Army and Navy who were called to active duty. A study of the returns indicates the following:

1. Only two graduates were inducted by order of Selective Service boards before completing at least one year of intern training.

2. Up to July 1, 1941 two hundred and seventy-eight interns and five hundred and sixty-nine residents holding commissions in the reserve corps entered the military service before the completion of their current hospital appointments.

3. Comments by hospital superintendents led to the belief that all medical graduates called up by Selective Service boards were given an opportunity to apply for commissions in the Medical Reserves of the Army or Navy.

4. According to the annual reports received from hospitals in January 1941 there were on duty in approved internship and residency hospitals 7,553 interns and 5,247 residents. These figures include women graduates and also men serving in army and navy hospitals.

5. From these data it appears that the preparedness program has not yet had as marked an effect on the house staffs of hospitals as might have been expected. However, hospitals probably will encounter increasing difficulty in maintaining their intern and resident staffs.

opportunities for continuation study have been reviewed again for the year 1940-1941 and are presented in the present report.

As a result of the Council's survey the Principles Regarding Graduate Medical Schools adopted in 1923 were revised by the Council on June 11, 1940 and approved by the House of Delegates. The need was recognized for adequate clinical facilities where physicians who do not limit their practice to a specialty may find ample opportunity to learn by personal examination of patients and by conduct of essential laboratory tests. The progressive grading of courses which would provide continuity of instruction as part of a systematic program over the years was emphasized. Institutions

(Continued on page 712)

1. J. A. M. A. 116:1067 (March 15) 1941.
2. J. A. M. A. 114:1172 (March 30) 1940.
3. J. A. M. A. 111:801 (Aug. 27) 1938.
4. J. A. M. A. 113:773 (Aug. 26) 1939.
5. J. A. M. A. 115:709 (Aug. 31) 1940.
6. Graduate Medical Education in the United States: Continuation Study for Practicing Physicians, 1937 to 1940, Chicago, American Medical Association.

TABLE 1.—CONTINUATION COURSES FOR PRACTICING PHYSICIANS, 1940-1941
A. In Proximity to Their Homes

Location of Course	Sponsoring Agencies	Director of Program	Subjects	Duration of Course	Time Given	Type of Instruction	Facilities for Graduate Programs	Instructors	Persons Eligible for Admission	Registration Fee	Approximate No. M.D.'s Attending	Additional Contributing Agencies and Funds
Alabama 22 centers (1 circuit4)	St. Med. Assn., St. Dept. Public Health, Med. Ex. Div., Tulane U. of La.	Director, Med. Ex. Div., Tulane U. of Louisiana	Gynecology, Surgery	6 evenings	Spring and Summer	Lectures, Clinics, Demonstrations, Round Table Discussions, Consultation Service	Hospitals and other local facilities	Med sch., out of state	Co Med Soc members	\$5	291 (3 circuits)	Commonwealth Fund
California Statewide	St. Med. Assn.	Secretary, Comm. on P. G. Activities	General	1 to 3 days	Throughout year	Lectures, Clinics, Symposiums, Demonstrations, Round Table Discussions	Hospitals	Med sch and in state	Co Med Soc members	No	...	Co Med Soc.
Rural counties	St. Med. Assn., Calif. P. B. Assn	Chairman, Comm on P. G. Educ.	Communicable Diseases, Tuberculosis	1 day evening	Throughout year	Lectures, Clinics	Hospitals, outpatient departments	Med sch and in state	Co Med Soc members	No	575	.....
Colorado 6 centers	St. Med. Soc.	Comm. Regional P. G. Courses	Heart and Kidney Affections	1 day weekly, 3 times	June	Lectures, Discussions, Presentation of Cases	Public buildings	Med sch and in state	Co Med Soc members	\$10	37	... ..
Idaho 5 centers	St. Dept. of Public Health	Director	Pediatrics, Obstetrics, Gynecology, Dermatology and Syphilology	5 to 6 days	Spring	Lectures, Clinics, Demonstrations	Hospitals, public buildings	Med sch., out of state	M.D.'s	No	...	... ..
Illinois 9 centers	St. Med. Soc.	Chairman, Scientific Service Comm.	General	1 day	Throughout year	Lectures, Clinics, Demonstrations, Symposiums, Round Table Discussions	Hospitals, public buildings	Med sch., in state and out of state	M.D.'s	No	1,388	St. Dept. of Health
Indiana 9 centers	Indiana T. B. Assn	Supt. of local sanatorium	Tuberculosis	1 day	Fall	Clinics, Demonstrations, Round Table Discussions	T. B. hospitals	In state and out of state	M.D.'s	No	125	... ..
Statewide	St. Bd. of Health	Chief, Bur. of Mat. and Child Health	Obstetrics, Pediatrics	1 day weekly, 1 to 6 times	Throughout year	Lectures, motion pictures	Hospitals, public buildings	Med sch., in state and out of state	M.D.'s	No	366	Indiana U. Sch. of Med., St. Med. Assn.
Iowa 12 centers	St. Med. Soc.	Chairman, Speakers Bureau	General	Once weekly or monthly, 4 to 8 times	Spring and Fall	Lectures, Round Table Discussions	Hospitals and hotels	Med sch and in state and out of state	Co Med Soc members	None to \$8	650	St. Univ. of Iowa, St. Dept. of Health
Kansas 10 centers	St. Bd. of Health and St. Med. Soc.	Secretary, St. Bd. of Health	Cancer, Tuberculosis	1 day	Spring	Lectures, Discussions	Public buildings	Med sch and in state and out of state	M.D.'s	No	170	U. S. Children's Bureau, Kan. T. B. and Health Assn.
Louisiana 5 centers	St. Bd. of Health, St. Med. Soc.	Superior, Mat. and Child Health Services	Obstetrics, Pediatrics	1 day weekly, 6 times	Varies	Lectures, Clinics, Demonstrations, Round Table Discussions, Clin. Path. Confs.	Public buildings	Med sch., in state and out of state	M.D.'s	No	510	U. S. Children's Bureau
Massachusetts 20 centers	St. Med. Soc. and Dept. of Public Health	Secretary, Exec. Comm. on P. G. Instruction	General	1 day weekly, 8 times	Throughout year	Lectures, Case Discussions	Hospitals, outpatient departments	In state and med sch.	M.D.'s	No	718	U. S. Public Health Service, U. S. Children's Bureau
Michigan 9 centers	Univ. of Mich. Med. Sch., St. Med. Soc.	Chairman, Dept. of P. G. Med.	General	1 day weekly, 8 times	April and October	Lectures, Clinics, Symposiums	Hospitals, public buildings	Med sch and in state	M.D.'s	No	1,038	St. Dept. of Health, Ruckham Fund, Kellogg Foundation, Wayne U. Coll. Med.
Minnesota 14 centers	Minn. Public Health Assn	Executive Secretary	Tuberculosis	1 day	Varies	Lectures, Clinics, Demonstrations, Round Table Discussions	Hospitals, outpatient departments	Med sch and in state and out of state	M.D.'s	No	500	Co Med. Soc., T. B. Sanatoriums

Physician's 10 centers	St Med Assn, St Bd of Health, Med 1st Div of the U of Ia	Director, Med F-t Div, Tulane U of Louisiana	Medicine, Tuber- culosis	Give- nings	Through out year	Lectures, Clinics, Demonstrations, Round Table Dis- cussions, Consul- tations	Hospitals, pub- lic buildings	Med sch, out of state	M D's	\$5	137	Commonwealth Fund
Missouri 1 centers	Mo T B Assn	Exec Secretary	Tuberculosis	1 eve- ning	Varies	Lectures, Sympo- siums, Demonstra- tions, Round Table Discussions	Public buildings	In state	M D's	No	179	None
Montana 9 centers	St Med Assn and St Bd of Health	Chairman, P G and Child Health Comms	Pediatrics and Obstetrics	2 days	May and June	Lectures, Round Table Discussions	Hospitals	Med sch, out of state	M D's	No	118	Social security funds
Nebraska 18 centers	St Dept of Health, St Med Assn, Univ of Neb Coll of Med	Director, Div of Mat and Child Health	Obstetrics and Pediatrics	1 day, 1 time	Fall and Spring	Lectures, Clinics, Demonstrations, Round Table Dis- cussions	Hospitals	Med sch	M D's	No	200	Federal funds
New Jersey 9 centers	St Med Soc	Chairman, P G Comm	Medicine and Surgery	1 day weekly, 6 times	Spring	Lectures, Demon- strations, Round Table Discussions	Hospitals	Med sch, out of state	M D's	None to \$10	281	Rutgers University, Extension Division
9 centers	St Dept of Health, St Med Soc	Chief, Div of V D Control	Veneral Diseases	2 days weekly, 6 weeks	Fall and Spring	Lectures, Demon- strations	Hospitals, pub- lic buildings	Med sch, in state and out of state	M D's	No	112	Federal funds
New York 9 centers	St Med Soc and St Dept of Health	Chairman, Coun- cil on Public Health and I due	General	1 day weekly, 2 to 8 times	Through out year	Lectures, Clinics, Demonstrations, Symposiums	Medical Schools, hospitals, out- patient depart- ments, laboratories, public buildings	Med sch and in state	M D's	No	1,430	Federal funds
North Carolina 2 centers	U of North Caro- lina Extension Div and Med Sch	Asst Director, 1st Div	General Medicine, Surgery	1 day weekly, 6 times	Spring	Lectures, Clinics, Symposiums, Clin Path Confs	Hospitals and hotels	Med sch, out of state	M D's	\$15	160	Co Med Soc
2 centers	St Bd of Health, St Med Soc	Asst St Health Officer	Obstetrics, Ped- iatrics	1 day	Varies	Lectures, Sympo- siums	Public buildings	Out of state	M D's	No	..	..
Ohio 10 centers	St Med Assn	Chairman Comm on Education	General	3 sessions monthly	Fall	Lectures	Public buildings	Med sch and in state	Co Med Soc members	No	1,181	None
Oklahoma 10 centers (7 clinics)	St Med Assn	Field Dir Comm on P G Study	Pediatrics	1 session weekly, 10 times	Through out year	Lectures, Clinics, Demonstrations, Round Table Dis- cussions	Hospitals, pub- lic buildings	Med sch, out of state	M D's	\$6	6.5	U S Children's Bureau, Common wealth Fund
Oregon 10 centers	St Bd of Health, St Med Soc	Director, Div Mat and Child Health	Obstetrics, Ped- iatrics	1 to 2 days	June	Lectures	Public buildings	Med sch, out of state	M D's	No	.	St Med Soc
Rhode Island 10 centers	St Health Dept	Chief Div of Mat and Child Health	Pediatrics	1 session	Through out year	Lectures, Demon- strations, Round Table Discussions	Hospitals, pub- lic buildings	Out of state	Co Med Soc members	No	.	St Med Soc
Tennessee 10 centers (9 clinics)	St Med Assn	Chairman, Comm on P G Instr, Int Med	Pediatrics (1910), Medicine (1911)	1 day weekly, 10 times	Two year courses	Lectures, Clinics, Demonstrations, Round Table Dis- cussions, Consul- tation Service	Hospitals, pub- lic buildings	Out of state	M D's	\$2.50 to \$10	1,180 (pedi- atrics)	St Health Dept, U of Tenn and Vanderbilt U Med, Schs, Common wealth Fund
Virginia 5 centers	St Med Soc, Univ of Va 1st Div	Exec Secretary Dept of Clin and Med Edu	General and Special	1 day weekly, 10 times	Through out year	Lectures, Clinics, Symposiums Demonstrations, Round Table Dis- cussions	Medical Schools, hospitals, pub- lic buildings	Med sch, in state and out of state	M D's	\$5	230	U of Virginia Dept of Med, Med Coll of Virginia
Washington 8 centers	St Dept of Health, St Med Assn	Director, Div Mat and Child Hygiene	Obstetrics	1 to 3 days	Summer	Lectures, Round Table Discussions	Public lecture rooms	Med sch, out of state	M D's and guests	No	86	U S Children's Bureau
West Virginia 10 centers	St Med Assn and St Health Dept	Exec Secretary	Pediatrics, Obstet- rics, Syphilis	1 day weekly, 6 times	Summer	Lectures, Clinics, Symposiums, Round Table Dis- cussions	Public buildings	Out of state and in state	M D's, nurses and technicians	No	576	U S Children's Bureau
Wisconsin 5 centers	St Med Soc	Council on Scien- tific Work	General	1 day	Spring	Lectures, Clinics, Demonstrations, Round Table Dis- cussions	Public buildings	Med sch, in state and out of state	Co Med Soc members	\$5	435	St Bd of Health

(Continued from page 709)

which offer courses leading to restricted practice in a specialty have greater responsibilities than formerly, and these have been outlined in the newly adopted set of principles.

This year, for the first time, the Council is gathering data on proposed courses, and it is contemplated that publication of this information will be made at periodic intervals for ready reference in *THE JOURNAL*. The institutions conducting graduate programs and their location, the date when instruction begins, the length and content of the courses, the type of instruction offered, the number of physicians accepted for each course and their eligibility, the instructors participating and the fees required will be included. Courses restricted to intramural postgraduate education in obstetrics and pediatrics designed for practicing physicians recently were summarized briefly, such courses being financed in whole or in part from social security funds.⁷

RECENT DEVELOPMENTS IN STATE AND LOCAL PROGRAMS

The Associated State Postgraduate Committees held their fifth annual meeting at Cleveland on June 4, 1941. It was the suggestion of Dr. Henry H. Turner of Oklahoma that a national registry of postgraduate assemblies and a registry for postgraduate instructors be established. A committee is to be appointed to study the proposal and to present a resolution on this subject at the next annual meeting of the House of Delegates.

The University of California Medical School, San Francisco, now serves as a center for postgraduate education in pediatrics and obstetrics for the states of California, Nevada, Utah, Idaho, New Mexico and Arizona. Funds are supplied from participating states, the Rosenberg Foundation and the Children's Bureau of the U. S. Department of Labor.

During January 1941 a three day refresher course in the clinical aspects of dermatology was given for practicing physicians at the University of California Medical School, San Francisco. A fee of \$20 was charged. During June 1941 a week of instruction in general medicine, including the fields of heart disease, diseases of the blood, gastroenterology and endocrinology, and a one week course in general surgery, including traumatic surgery, fractures, treatment of infections and hand injuries, was given. Each program was designed for practicing physicians.

From January to April 1941 the Committee on Clinical Congress of the Connecticut State Medical Society organized two courses of fourteen lectures each given at weekly intervals in the Yale University School of Medicine on diseases of nutrition and on industrial medicine. A registration fee of \$3 was charged for each course.

In Georgia, postgraduate courses conducted by the state medical association were inaugurated during the past year. One week courses in general medicine and surgery were given at Waycross and at Albany. These seminars were financed by an appropriation of the medical association. In the future a small registration fee will be charged.

A five weeks postgraduate course in obstetrics was offered during 1940-1941 to practicing physicians by the University of Chicago and the Chicago Lying-in Hospital in cooperation with the Illinois State Depart-

ment of Health and the Children's Bureau of the United States Department of Labor. The number of registrants was limited to five for each course. A registration fee of \$15 was charged.

The medical school of the State University of Iowa, Iowa City, established a one week course in obstetrics during 1940-1941. Only three physicians were accepted each week; no registration fee was charged. The Division of Maternal and Child Health of the State Department of Health cooperated.

The Department of Graduate Medicine, School of Medicine, Tulane University of Louisiana, New Orleans, offered a course in tropical medicine and medical parasitology to physicians during 1940-1941. Instruction in the etiology, epidemiology, pathology, symptomatology, diagnosis, treatment and control of diseases of warm climates was included during four and one-half months. Physicians from Latin America were enrolled as well as those from other countries. A registration fee of \$300 was charged and clinical pathologic equipment was provided by each registrant.

The chairman of the committee on graduate education, Dr. F. T. Hill of the Maine Medical Association, has reported that, while only 10 per cent of physicians continue their education independently, 73 per cent attend hospital staff meetings regularly. This fact suggests the more efficient use of hospital facilities in any program of postgraduate study. Staff meetings with case studies as a basis of the program with a clinical pathologic presentation, panel discussions and the participation of guest speakers have proved especially effective in Maine.

The Massachusetts Medical Society in cooperation with the state department of health and the U. S. Public Health Service planned to provide a medical library extension service in connection with the state society's program of postgraduate education. The Boston Medical Library was charged with the operation and with the establishment of the loan service. Funds were provided by the U. S. Public Health Service.

The Medical Association of Montana has joined the four other state societies of Colorado, New Mexico, Utah and Wyoming in the Rocky Mountain Medical Conference. The 1941 conference is scheduled to be held in the Yellowstone National Park, September 2 to 4.

At the Continuation School of Medicine, Detroit, under the joint auspices of the Wayne County Medical Society and the Wayne University College of Medicine a course in industrial medicine and surgery was given for the first time during 1940-1941. Fifty-three enrolled for the lectures, illustrated by lantern slides and movies.

The Committee on Post-Graduate Education of the Medical Society of New Jersey has affiliated with the New York University College of Medicine for the purpose of organizing clinical teaching in the Newark City Hospital. Six to nine weeks refresher courses with two or three hour sessions each week for groups of from four to twenty physicians were planned to permit close supervision and instruction and have been conducted during 1940-1941. Subjects included were peripheral vascular diseases, fractures, diseases of the liver and biliary tract, amputations and tuberculosis. Teaching at the bedside was emphasized. Tuition of \$20 or \$25 was charged.

The New York University College of Medicine has organized similar courses for the practicing physicians of Queens County, N. Y. Subjects included for this group were diagnostic roentgenology, internal medicine,

7. Daily, E. F.: Intramural Postgraduate Education in Obstetrics and Pediatrics, *J. A. M. A.* 115:1436 (Oct. 26) 1940.

varicose veins and dermatology. Courses were given in the clinics and wards of the Queens General Hospital, each consisting of a two hour session weekly for five to ten weeks. Case teaching methods were employed, and in the course in internal medicine each registrant had the opportunity to demonstrate the various methods of diagnosis. Fees varied from \$25 to \$50; from six to ten students were accepted for each course.

At Duke University School of Medicine, Durham, N. C., a course in obstetrics and pediatrics was organized during 1940-1941. Registration was limited to four physicians practicing in the state. A \$15 fee was charged, which was returned on completion of the course. The maternal and child health service division of the state board of health cooperated in providing meals and lodging for registrants. Instruction was of an informal, clinical and practical nature.

The Northwest Texas Medical Association held its first postgraduate assembly at Marshall, Texas, on Dec. 5, 1940. The program was presented by members of the staff of Baylor University College of Medicine. There were ten hours of lectures and round table discussions. A \$1 registration fee was charged.

A speakers' bureau has been established by the Postgraduate Medical Education Committee of the Washington State Medical Association. Eighty-eight Washington physicians comprise the bureau. Subjects included those sponsored by the state department of health. In addition, a plan has been devised for groups of five out of state speakers to give lectures and clinics in obstetrics and gynecology, pediatrics, surgery, medicine, traumatic surgery and fractures. These lectures, designed primarily for practicing physicians, are to be given in a central location in five districts of the state, with one afternoon and evening meeting at local hospitals for five consecutive weeks.

RECENT DEVELOPMENTS IN NATIONAL PROGRAMS

Under the joint auspices of the Pan American Sanitary Bureau and the United States Public Health Service twenty-one fellowships have been awarded to young medical graduates of thirteen countries of South and Central America during 1940-1941. They were distributed as follows: Argentina two, Bolivia one, Brazil two, Colombia three, Chile one, Costa Rica one, Cuba one, Ecuador four, Guatemala two, Haiti one, Honduras two, Mexico one and Peru one. These fellows were assigned to teaching or research institutions in New York, Massachusetts, Maryland, Michigan, Pennsylvania, Illinois, Missouri, Virginia, Louisiana and the District of Columbia.

The number of creditable applications for intern training and graduate study from physicians of Latin America is increasing. For this reason additional funds have been provided by the coordinator of commercial and cultural relations among the American republics for financing additional fellowships for the year 1941-1942. At least thirty-five additional fellows are to be selected and placed during the coming year.

The American Foundation for Tropical Medicine, Inc., has established a limited number of fellowships for postgraduate study in tropical medicine at Tulane University of Louisiana School of Medicine, New Orleans. These fellowships are available to qualified physicians of Central and South America and Mexico. Tuition fees are paid by the foundation as well as travel and maintenance not to exceed \$700. The United States Department of State, Washington, D. C., aids

in publicizing this graduate study, which is confined largely to the diagnosis and management of diseases of warm climates.

From July 1940 to June 1941 one thousand, one hundred and seventy-five applications for instruction in public health were received by state health departments. Approximately 28 per cent of the applicants were physicians. The United States Public Health Service approved such applications as well as budgets of state health departments and of schools which offered post-graduate public health training.

Three types of training were provided: academic study, college or university accredited field training and nonaccredited field practice, which included supervised experience in clinics and hospitals. The first and third types were each selected by about half of the applicants. The duration of training varied from less than one month to twelve months.

Applications were received from physicians of thirty-eight states and Puerto Rico. Johns Hopkins University, Vanderbilt University, Harvard University, University of Michigan, University of North Carolina, University of Minnesota and Columbia University received the greatest number of graduate students in public health under this program, while ten physicians applied to other institutions.

The United States Army Medical School, Washington, D. C., provided during 1940-1941 a condensed basic graduate course of one month's duration for medical officers. Professional specialists' courses of varying duration were continued during 1940 and until March 1, 1941, when they were discontinued except for informal training. After approximately six months' duty, Reserve and National Guard Medical Department officers may be afforded an opportunity to attend a one month refresher course at the Medical Field Service School or at certain general hospitals. A course in tropical medicine for medical officers has been authorized. This instruction will be given over four weeks and will be repeated each month. It is contemplated that the first class will begin about Aug. 1, 1941. Enrollment will be limited to approximately thirty men.

During 1940-1941 the Bureau of Medicine and Surgery, Navy Department, Washington, D. C., provided six weeks of instruction for thirty-one assistant surgeons of the United States Navy. The general subject was military medicine, with special instruction in the medical aspects of air raid precautions, atmospheric hygiene, aviation medicine, chemical warfare and damage control, as well as neuropsychiatry and other subjects commonly included in the study of medicine. Beginning in August 1941 a class of fifty medical officers of the Navy will assemble at the Naval Medical School, Naval Medical Center, Washington, D. C., for a similar course of instruction.

The United States Department of Labor, Children's Bureau, Washington, D. C., continues to provide funds for the postgraduate education of practicing physicians. Thirty-six states were aided and more than two hundred communities were affected. Registration for extramural refresher courses exceeded six thousand physicians, and for intramural courses given in medical schools more than five hundred physicians registered.

The American College of Physicians offered, for the fourth year, ten courses in special subjects for members of the college and for physicians preparing for certification by the American Board of Internal Medicine. For the first time instruction was given during the

(Continued on page 721)

TABLE 1.—CONTINUATION COURSES FOR PRACTICING PHYSICIANS, 1940-1941
B. Where There Are Ample Facilities for Clinical Instruction—Five or More Days

Location of Course	Sponsoring Agencies	Director of Program	Subjects	Duration of Course	Time Given	Type of Instruction	Facilities for Graduate Programs	Instructors	Eligible for Admission	Registration Fee and/or Tuition	Approximate No. of M.D.'s Attending	Additional Contributing Agencies and Funds
Alabama Tuskegee Institute	John A. Andrew Clin. Soc.	Secretary-Treasurer	General and Special	1 week	April	Lectures, Clinics, Demonstrations, Round Table Discussions, Clin. Path. Confs.	Hospital, outpatient clinics	Med. sch., in state and out of state	Negro M.D.'s	\$5	153	John A. Andrew Mem'l Hosp.
Nashville, Tenn.	Vanderbilt U. Sch. of Med., Commonwealth Fund	Asst. Prof. of Medicine	Medicine, Pediatrics, Obstetrics, Gynecology	1 month	Summer	Lectures and Clinics	Medical School, hospital outpatient department	Med. sch.	M.D.'s	\$55	19	
Arizona San Francisco, Calif.	St. Bd. of Health, Univ. of California Med. Sch.	Assoc. Prof. of Pathology, Univ. of California	Obstetrics and Pediatrics	1 and 2 weeks	Summer, Dec. and Jan.	Lectures, Clinics, Demonstrations	Medical School, hospital, outpatient department	Med. sch.	M.D.'s	No	14	U. S. Children's Bureau, St. Med. Assn.
California Los Angeles	College of Med. Evangelists	Chairman, Comm. on P. G. Educ.	General and Special	6 to 12 weeks	Twice yearly	Lectures, Symposia, Demonstrations, Round Table Discussions	Medical School, outpatient department, laboratories	Med. sch.	M.D.'s	\$5-\$100	51	Alumni Assn.
Pasadena	Huntington Mem'l Hosp.	Chairman, Program Comm.	Pediatrics and Clinical	1 to 2 weeks	October	Lectures, Demonstrations, Clin. Path. Confs.	Hospital	Med. sch., in state and out of state	M.D.'s	\$10-\$25	70	S. P. Black Mem'l Lecture Assn.
San Francisco	Stanford U. Sch. of Med., San Francisco Dept. of Public Health	Dean	General and Special	1 week	September	Lectures, Demonstrations, Ward Rounds, Clinics, Lab. Experience	Medical School, hospital	Med. sch.	M.D.'s	\$25-\$35	134	
U. of Calif. Med. Sch., St. Dept. of Public Health	Assoc. Prof. of Pathology		Obstetrics, Pediatrics	1 and 2 weeks	Summer, Dec. and Jan.	Lectures, Clinics, Demonstrations	Medical School, hospital, outpatient department	Med. sch.	M.D.'s	No	55	U. S. Children's Bureau, Rosenberg Foundation, St. Med. Assn.
U. of Calif. Med. Sch.	Assoc. Prof. of Medicine		Medicine, Surgery, Orthopedics, Obstetrics, Gynecology, Dermatology	5 days to 2 weeks	January, June	Lectures, Clinics, Table Discussions, Clin. Path. Confs., Operative Demonstrations	Medical School, hospital, outpatient department, laboratories	Med. sch.	M.D.'s	\$25-\$50	112	
Colorado Denver	St. Med. Soc., Univ. of Colorado Sch. of Med.	Comm., Medical Educ. and Hospitals	General, Cardiology, Fractures	5 days	February	Lectures, Clinics, Symposia, Demonstrations, Round Table Discussions, Clin. Path. Confs.	Medical School, hospitals, outpatient departments	Med. sch. and in state and out of state	M.D.'s	\$8	439	
Connecticut New Haven	St. Med. Soc., Yale U. Sch. of Med.	Chairman, Clinical Congress	Industrial Med., Nutrition	Once a week for 10 weeks	Spring	Lectures, Symposia	Medical School	Med. sch., in state and out of state	M.D.'s	\$3-\$6	100	None
District of Columbia Washington	George Washington U. Sch. of Med.	Professor of Ophthalmology	Ophthalmology, Avian Medicine	3 courses, 1 week each	February and April	Lectures, Clinics, Symposia, Clin. Path. Confs., Ophthalmic animal surgery	Medical School, hospital, laboratory	Med. sch., out of state, med. officers of Army, Navy & Civil Aeronautics Authority	M.D.'s	\$25-\$100	717	
Florida Jacksonville	Howard U. Sch. of Med.	Director, P. G. Course in V. D. Control	Veneral Disease Control	3 months	Fall, Winter and Spring	Lectures, Clinics, Round Table Discussions	Medical School, outpatient department	Med. sch.	M.D.'s	\$201	11	U. S. P. H. S.
St. Med. Assn., St. Bd. of Health	Chairman, P. G. Course Comm. (Joint comm.)		General and Special	1 week	June	Lectures, Clinics	Hospital, hotel	Med. sch., out of state	M.D.'s	\$5	150	None

Georgia	Alabama and Whitcomb	Med. Assn. of Georgia	Chairman, Comm. on P. G. Educ.	General Medicine and Surgery	1 week	April	Lectures, Symposi- ums, Demonstrations, Bedside Clinics	Hospitals	Med. sch., in state and out of state	M.D.'s	No	38	None
Augusta		Dept of Public Health, U of Georgia Sch of Med	Director of Prev. Diseases	Veneral Diseases	2 weeks	Winter	Lectures, Clinics, Demonstrations, Round Table Dis- cussions, Clin	Medical School, hospitals, out- patient depart- ment, laboratories	Med. sch.	M.D.'s	No ¹	43	U. S. P. H. S.
		U of Georgia Sch of Med	Dean	General Medicine and Surgery	2 weeks	June	Lectures, Clinics, Demonstrations, Ward Rounds, Assignment of Patients, etc	Medical School, hospital, out- patient depart- ment	Med. sch. and in state	Negro M.D.'s	No	35	.....
				Endocrinology	1 week	June	Lectures, Clinics, Demonstrations, Symposiums	Medical School	Med. sch.	M.D.'s	\$25	22	.....
Illinois	Chicago	Children's Mem'l Hosp	Chief of Staff	Pediatrics and Specialties	1 month	October	Lectures, Clinics, Demonstrations, Round Table Dis- cussions, Clin	Hospital, out- patient depart- ment, laboratory	Med. sch., hos- pital staff	M.D.'s	\$100	11	None
		Michael Reese Hosp	Director, Cardiovas- cular Research	Borschach Method of Psychological Interpretation, Electrocardiog- raphy	5 days and 2 weeks	June, August	Lectures, Clinics, Demonstrations, Round Table Dis- cussions, Clin	Hospital, out- patient depart- ment, laboratory	Med. sch. and in state	M.D.'s, psychol- ogists with clin- ical experience	\$5 and \$100	26	None
		Northern Western U Med Sch	Asst to Dean	Urology, Endo- crinology, Cardio- renal vascular disease	1 week to 1 month	September	Lectures, Demon- strations, Clinics, Ward Rounds	Medical School, hospital	Med. sch.	M.D.'s	\$50	31	.....
		St. Dept of Public Health, U of Illinois Coll of Med, St. Med Soc.	Chairman, Advisory Comm on Mat. and Child Health	Obstetrics, Peli- atries	1 and 2 weeks	Through- out year	Lectures, Clinics, Demonstrations, Round Table Dis- cussions, Clin	Medical School, hospitals, out- patient depart- ment	Med. sch.	M.D.'s in Ill (excl. Chicago)	\$10 ¹	34	.....
		U of Chicago Sch. of Med.	Dean of Students	Gastroscopy	2 weeks, 3 months	Through- out year	Dietetic and Clin- ical	Medical School, hospital, out- patient depart- ment	Med. sch.	M.D.'s	\$100 \$150	25	.....
		U of Chicago Sch. of Med., Chicago Lying-In Hosp	Prof. of Obstetrics and Gynecology	Obstetrics	4 to 6 weeks	Through- out year	Lectures, Clinics, Demonstrations, Round Table Dis- cussions, Clin.	Hospital, out- patient depart- ment, laboratories	Med. sch.	M.D.'s	\$25	70	U. S. Children's Bureau, St. Dept. of P. H
		U of Illinois Coll. of Med	Dean	Anatomy, Oto- laryngology, Oph- thalmology	1 week to 8 months	Through out year	Lectures, Clinics, Path. Confs.	Medical College, hospital, out- patient depart- ment	Med. sch.	M.D.'s	\$10 \$100	40	.....
Indiana	Indianapolis	Indiana U. Sch of Med	Chairman, Dept of P. G. Educ.	Cardiology, Oto- laryngology	1 and 2 weeks	Spring	Lectures, Clinics, Demonstrations, Round Table Dis- cussions, Clin	Medical School, hospitals, out- patient depart- ment	Med. sch., in state and out of state	M.D.'s	\$50 \$130	58	.....
				General Medicine and Surgery	1 week	Spring	Lectures, Clinics, Symposiums, Demonstrations, Round Table Dis- cussions, Clin	Medical School, hospitals, out- patient depart- ment	Med. sch., in state and out of state	M.D.'s and med- ical students	No	300	Federal funds
		St. Bd of Health, Indiana U. Sch. of Med, St. Med Assn.	Chief, Bureau Mat. and Child Health, St. Bd. of Health	Obstetrics	2 weeks	Through- out year	Lectures, Clinics, Symposiums, Demonstrations, Round Table Dis- cussions, Clin	Medical School, hospitals, out- patient depart- ment	Med. sch., in state and out of state	M.D.'s	\$10 ¹	15	U. S. Children's Bureau
Iowa	Iowa City	St. Univ of Iowa, St. Dept of Health	Assoc. in Obstetrics and Gynecology	Obstetrics	6 days	Through out year	Clinics, Demonstra- tions, Round Table Discussions, Ward Walks, Delivery Room Observation	Hospital	Med. sch.	M.D.'s	No	10	.....

TABLE 1.—CONTINUATION COURSES FOR PRACTICING PHYSICIANS, 1940-1941—Continued
B. Where There Are Ample Facilities for Clinical Instruction—Five or More Days

Location of Course	Sponsoring Agencies	Director of Program	Subjects	Duration of Course	Time Given	Type of Instruction	Facilities for Graduate Programs	Instructors	Eligible for Admission	Registration Fee and/or Tuition	Appoint-ment No. of M D's Attending	Additional Contributing Agencies and Funds
Kansas												
Ynporin	St Med Soc.	Chairman, Comm on Study of Heart Disease	Heart Disease	5 days	October	Lectures, Clinics, Round Table Dis- cussions	Hospitals	Med sch, out of state	M D's	\$15	30	St. Bd of Health
Kentucky												
Lexington	U of Kentucky, St. Dept of Health	Head, Dept of Hyg. and Public Health	Public Health	12 weeks	Summer	Lectures, Demon- strations, Round Table Discussions, Field Work	Univ. out- patient depart- ment, laboratory of state	Med sch, in state and out of state	M D's, nurses, sanitarians	\$100	24	U. S. P. H. S.
Louisville												
	St Med Assn, U. of Louisville Sch. of Med.	State Pediatric Consultant	Pediatrics	1 day a week, 10 weeks	Spring	Lectures, Clinics, Demonstrations, Round Table Dis- cussions	Children's Hos- pital	Med sch	M D's	\$5	22	None
Louisiana												
New Orleans	Plint Goodridge Hosp. of Dilard U.	Superintendent	General and Special	2 weeks	June	Lectures, Clinics, Demonstrations	Hospital	Med sch, in state and out of state	Negro M D's	\$5	36	...
	St. Dept of Health, La St. U Med Center	Superior, Nat and Ch Health	Obstetrics	2 weeks	Through out year	Lectures, Clinics, Demonstrations, Round Table Dis- cussions, Case Teaching	Medical Schools, hospitals, out- patient depart- ments	Med sch	M D's	No	15	U S Children's Bureau
	Tulane U of La Sch of Med, Dept of Grad Med	Director	General (intensive instruction)	1 week	October	Lectures, Clinics, Symposiums, Clin Path Confs	Medical School	Med sch	M D's	\$5	64	.....
Maine												
Boston, Mass	Bingham Associates Fund, St Med Assn	Director	General and Special	2 weeks to 1 month	Through- out year	Lectures, Clinics, Symposiums, Clin Path Confs	New Eng Med Center, hospitals, medical school	Med sch.	Co Med Soc members	No	...	Tufts College Med. Sch
	Commonwealth Fund, St Med Assn.	Director, Div of P H	Medicine, Obstet- rics, Pediatrics, Office Surgery	1 month	Varies	Lectures, Clinics, Bedside Teaching	Medical School, hospital, out- patient depart- ment	Med sch.	Co Med Soc. members	No 1	...	Harvard Med. Sch.
Maryland												
Baltimore	Johns Hopkins U. Sch of Med	Dean	General and Special	6 months to 1 year	Per arrange- ment	Clinical, Labora- tory	Medical School, outpatient department	Med sch	M D's (accept- able to depart- ment heads)	\$150 \$300	14	None
Massachusetts												
Boston	American College of Physicians	Committee, P G Course No. 4	General Medicine	3 weeks	April	Lectures, Clinics, Demonstrations, Ward Rounds, Clin Path Confs	Medical School, hospitals	Med sch, in state	M D's 2	\$60	65	Harvard Med. Sch
		Director, P. G. Course No. 5	Allergy	1½ weeks	April	Lectures, Clinics, Laboratory Pro- cedure, Discussions, Clin Path Confs.	Hospital, out- patient depart- ment, laboratories	Med sch.	M D's 2	\$30	6	Mass Gen. Hospital
		Director, P. G. Course No. 6	Gastroenterology	1 week	April	Lectures, Clinics, Demonstrations, Conferences	Medical School, hospitals	Med sch.	M D's 2	\$20	49	Boston U. Sch. of Medicine
		Dean	Electrocardiology, Roentgenology	12 exer- cises	Varies	Lectures, Demon- strations, Round Table Discussions	Hospitals, out- patient depart- ment	Med sch	M D's	\$20 \$75	8	None
		Assistant Dean	Preclinical, Gen- eral and Special	Varies	Through out year	Lectures, Clinics, Demonstrations, Clin Path Confs	Medical School, hospitals, out- patient depart- ment, laborator-	Med sch	M D's	\$15 4000	600	Commonwealth Fund

Cambridge	Tufts Coll. Med. Sch.	Chairman, P. G. Division	General and Special	1 to 4 weeks	Through-out year	Lectures, Clinics, Round Table Discussions	Hospitals, out-patient departments, laboratories	Med. sch.	M.D.'s	\$25-\$300	115	Bingham Associates Fund
	Mass. Institute of Technology	Dean of Science	Public Health	7½ weeks	Summer	Lectures, Demonstrations, Round Table Discussions, Field Trips	Health department	Staff members	M.D.'s, engineers, etc.	\$125	6	None
Michigan	American Coll. of Physicians	Director, P. G. Course No. 7	General Medicine	2 weeks	April	Clinics, Demonstrations, Conferences	Medical School, hospital	Med. sch.	M.D.'s 2	\$40	25	Univ. of Mich. Med. Sch.
	U. of Mich. Med. Sch., St. Med. Soc.	Chairman, Dept. P. G. Med.	Preclinical, General and Special	1 to 8 weeks	Through-out year	Lectures, Clinics, Symposiums, Demonstrations, Clin. Path. Confs.	Medical School, hospital, out-patient department, laboratories	Med. sch., in state and out of state	M.D.'s	\$5-\$50	772	St. Dept. of Health, Wayne U. Coll. of Med., Rackham Fund, Kellogg Foundation
	St. Dept. of Health, U. of Mich. Med. Sch., St. Med. Soc.	Director, Bureau of Mat. and Child Health	Obstetrics	2 weeks	Fall	Lectures, Clinics, Demonstrations, Round Table Discussions, Clin. Path. Confs.	Medical School, hospital	Med. sch. and in state	M.D.'s	No	15	.....
Detroit	Wayne Co. Med. Soc., Wayne U. Coll. of Med.	Chairman, Advisory Council	General Medicine, Specifics, Industrial Medicine and Surgery, Anatomy	1 day weekly, 1 semi-ester	Through-out year	Lectures, Clinics, Laboratory Demonstrations, Bedside Teaching	Medical College, hospitals, out-patient departments	Med. sch. and in state	Co. Med. Soc. members	\$5-\$60	236	None
Minnesota	U. of Minn. Med. Sch., Center for Continuation Study	Director, Dept. P. G. Educ.	General and Special	6 days	Through-out year	Lectures, Clinics, Symposiums, Demonstrations, Round Table Discussions, Clin. Path. Confs., Movies	Medical Center and affiliated hospitals	Med. sch., in state and out of state	Licensed Minn. M.D.'s; out of state Co. Med. Soc. members	\$2-\$25	229	St. Dept. of Health, St. Med. Assn., Commonwealth Fund, Federal funds
Rochester	American Coll. of Physicians	Director, P. G. Course No. 3	Gastro-Intestinal Diseases	2 weeks	February	Lectures, Clinics, Conferences, Demonstrations, Case Presentation	Mayo Clinic, hospitals	Clinic Staff	M.D.'s 2	\$40	35	The Mayo Foundation
Mississippi	Miss. St. T. B. Sanatorium	Superintendent	Diseases of the Chest	2 weeks or more	Summer	Clinics, Demonstrations, Round Table Discussions, Clin. Path. Confs., X-Ray Confs., Bedside Teaching	Hospital, out-patient department, laboratory	Resident hospital staff	M.D.'s	No ¹	3	St. Bd. of Health
Missouri	Washington U. Sch. of Med.	Dean	Obstetrics, Gynecology, Otolaryngology, Ophthalmology, Neuro-psychiatry	1 month, 8 months	June, October to May	Didactic and Clinical	Medical School, laboratories	Med. sch.	M.D.'s	\$20-\$300	54	None
Out of state centers	St. Bd. of Health	Director, Div. of Local Health Admin.	Public Health, Venereal Diseases	1 to 9 months	Through-out year	Didactic and Clinical	P. H. Schools, laboratories	Med. sch., clinic staff	M.D.'s	No	6	U. S. P. H. S.
Nebraska	U. of Nebraska Coll. of Med., St. Med. Assn., St. Dept. of Health	Dean	Obstetrics, Pediatrics	2 weeks	Through-out year	Lectures, Clinics, Demonstrations, Round Table Discussions	Medical School, hospitals, out-patient department, laboratories	Med. sch.	M.D.'s	No	6	Federal funds
Nevada	St. Dept. of Health, U. of California Med. Sch.	Assoe. Prof. of Pediatrics, U. of Calif.	Obstetrics, Pediatrics	1 and 2 weeks	Summer, Dec. and Jan.	Lectures, Clinics, Demonstrations	Medical School, out-patient department	Med. sch.	M.D.'s	No	6	U. S. Children's Bureau
New Jersey	Margaret Hague Maternity Hosp., Columbia Univ.	Medical Director	Obstetrics	1 or 3 months	Through-out year	Lectures, Clinics, Symposiums, Demonstrations, Round Table Discussions, Clin. Path. Confs., Antepartum and Postpartum Clinics	Hospital, out-patient department, laboratories	Med. sch., hospital staff	M.D.'s	\$100-\$250 ³	20	N. Y. Dept. of Health
Newark	Newark City Hosp., Essex Co. Med. Soc., New York U. Sch. of Med.	Chairman, P. G. Comm.	Medicine, Surgery, Orthopedics, Peripheral Vascular Disease	Once a week, 6 to 9 weeks	Varies	Lectures, Clinics, Demonstrations	Hospital, laboratories, public buildings	Med. sch., hospital staff	M.D.'s	\$15-\$25	75	St. Med. Soc.

TABLE 1.—CONTINUATION COURSES FOR PRACTICING PHYSICIANS, 1940-1941—Continued
B. Where There Are Ample Facilities for Clinical Instruction—Five or More Days

Location of Course	Sponsoring Agencies	Director of Program	Subjects	Duration of Course	Time Given	Type of Instruction	Facilities for Graduate Programs	Instructors	Eligible for Admission	Registration Fee and/or Tuition	Approximate No. of M.D.'s Attending	Additional Contributing Agencies and Funds
New Mexico San Juan Alamo, Culiacan	St. Dept. of Public Health, U. of California Med. Sch.	Assoc. Prof. of Pathology, U. of Calif.	Osteitis, Pediculosis	1 and 2 weeks	Summer, Dec and Jan	Lectures, Clinics, Demonstrations	Medical School, hospital, outpatient department	Med sch	M D's	No	9	
New York Brooklyn	Med. Soc. Co. of Minn., Long Island Coll. of Med.	Chairman, Joint Comm. on P. G. Rate	General	1 to 3 times weekly, 1 to 3 months	Fall, Winter and Spring	Lectures, Clinics, Demonstrations, Symposia, Round Table Discussions, Confs	Medical School, hospitals, outpatient department, Co. Soc. Bldg.	Med sch and in state	M D's	\$10 \$35 up	292	None
Buffalo	U. of Buffalo Sch. of Med.	Chairman Dept. of P. G. Work	General	2 weeks	September	Lectures, Clinics, Demonstrations, Round Table Discussions, Bedside Instruction	Medical School, hospitals, outpatient department, laboratories	Med sch	M D's	\$30	60	None
New York	American Coll. of Physicians	Director, P. G. Course No. 2	Allergy	2 weeks	February	Clinical and Laboratory Work, Conferences	Hospital	Med sch, hospital staff	M D's	\$40	8 (limited)	Roosevelt Hospital
	City of New York Dept. of Health	Director Bureau of Social Hygiene	Veneral Diseases	1 to 2 months (full time)	Varies	Demonstrations, Lectures, Clinics, Symposia, Round Table Discussions	City Health Dept., outpatient departments	Staff members, outside authorities	Licensed physicians	No	100	Federal funds
New York	Columbia U. Coll. of Phys. & Surg. and New York P. G. Med. Sch.	Dean	Preclinical, General and Special	1 week to 3 months	Through out year	Lectures, Clinics, Demonstrations, Clin. Path. Confs., Ward Rounds, Vocals	Medical School, hospitals, outpatient department, laboratories	Med sch, in state	M D's	\$15 \$100	288	
New York	New York Academy of Med.	Chairman, Comm. on Graduate Post night	Infections	2 weeks	October	Lectures, Clinics, Demonstrations, Round Table Discussions, Scientific Exhibit	Hospitals, Academy Bldg	Med sch, in state and out of state	M D's	\$3	700	....
New York	New York Eye & Ear Infirmary, Sch. of Ophth. & Otol.	Chairman	Ophthalmology, Otolaryngology, Brochoscopy, Proctology, General and Special Branches of Ophthalmology and Otolaryngology	1 week, 1 to 3 months	March Through out year	Lectures, Clinics, Demonstrations, Round Table Discussions, Clin. Path. Confs.	School of Oph., hospital, outpatient department	Med sch and in state	M D's	\$50	30	None
New York	New York Med. Coll.	Acting Dean	Cardiology, Tuberculosis, Hematology, Gastroenterology, Dot Surgery	1 to 3 months	Through out year	Lectures, Clinics, Demonstrations, Conferences	Hospital, laboratory	Med sch	M D's	\$40 \$110	178	None
New York	New York Polytechnic Med. Sch. & Hosp.	Medical Executive Officer	Preclinical, General and Special	1 to 9 months	Through out year	Didactic, Clinical and Laboratory	Medical School, hospital, outpatient department, laboratories	Med sch	M D's (approved Internship)	\$7-\$1,000	120	None
New York	New York Unit Coll. of Med.	Assistant Dean	General and Special	1 week to 1 year	Through out year	Lectures, Clinics, Discussions, Demonstrations, Conferences, Symposia	Medical College, hospital, outpatient department, laboratories	Med coll, in state and out of state	M D's	\$20 \$200	120	None
New York	St. Dept. of Health	Director, Syphilis Control	Syphilology	1 week, 1 to 2 months	Through out year	Didactic, Clinical	Medical College, hospitals, outpatient department	Med coll and in state	M D's	No	41	New York U. Coll. of Med. & P. H. Service
New York	Saratoga Inst. for Training Sch. of P. H.	Director	Tuberculosis	6 weeks	September, October	Lectures, Clinics, Demonstrations, Conferences, Clin. Path. Confs.	School, hospital, laboratories	Med sch and in state	M D's	\$100	20	Fdw. L. Truckau Foundation, P. H. C. Foundation, P. H. C. Foundation

North Carolina Chapel Hill	University of North Carolina Sch of Public Health	Dean	Silicosis and Tuberculosis in Industry	Public Health	1 week	Varies	Symposium, Lectures, Discussions	School, laboratory	Med sch, in state and out of state	MD's, Ind hygienists	\$25	100	...
Durham	St Rd of Health, Univ of North Carolina Sch of Med	Asst St Health Officer, Raleigh	Obstetrics, Pediatrics	Obstetrics, Pediatrics	5 days	3 months	Lectures, Laboratory Courses, Practical Field Work	School of Public Health, health units	P H sch, in state	MD's, public health workers	\$100	14	U S P H S
North Dakota Minneapolis, Minn and Iowa City, Iowa	N D St Dept of Health, St Univ of Minn, Iowa City, Iowa	St Health Officer, Bismarck, N D	Obstetrics, Pediatrics, Venereal Diseases	Obstetrics, Pediatrics	6 days	Varies	Lectures, Clinics, Symposia, Demonstrations, Round Table Discussions	Medical School, hospitals, out patient department	Med sch	MD's	No	114	U S Children's Bureau, Duke Hosp
Ohio Cincinnati	Univ of Cincinnati Coll of Med	Prof of Otolaryngology	Otolaryngology	Otolaryngology	1 week	Many	Lectures, Clinics, Demonstrations, Operative work on cadaver	Medical School or hospital	Med sch, out of state	MD's	No ¹	64	Local medical societies, Federal funds
Columbus	American Coll of Physicians	Director, P G Course No 8	Clinical Medicine from the Hematologic Viewpoint	Clinical Medicine	1 week	April	Lectures, Clinics, Informal and Clinical Path Conferences, Demonstrations, Round Table and General Discussions, Personal Patient Studies	St Univ, hospitals, laboratories	Med coll, in state	MD's ²	\$20	25	Ohio St U Coll, of Med
Oklahoma Oklahoma City	Univ of Oklahoma Sch of Med, St Health Dept	Associate Prof of Obstetrics	Obstetrics, Gynecology	Obstetrics, Gynecology	2 weeks	1 through out year	Lectures, Clinics, Demonstrations, Round Table Discussions, Ward Rounds, Home Deliveries	Medical School, hospital, out patient department, laboratories	Med sch	MD's	\$25	18	Federal funds
Oregon Portland	Oregon Academy of Opt and Otol, Univ of Oregon Med Sch	Chairman, Comm on Arrangements	Ophthalmology, Otolaryngology	Ophthalmology, Otolaryngology	1 week	April	Lectures, Clinics, Demonstrations, Round Table Discussions	Medical School, hospitals, out patient department, laboratories	Med sch, in state, out of state	MD's	\$25	80	.
Pennsylvania Philadelphia	American Coll of Physicians	Director, P G Course No 9	Cardiovascular Disease	Cardiovascular Disease	2 weeks	April	Lectures, Clinics, Discussions, Demonstrations, Symposia, Round Table Discussions, Ward Rounds	Hospitals	Med sch, in state, out of state	MD's ²	\$40	25	U of Pennsylvania Med Sch and Grad, Sch of Med
Pennsylvania Hospital	Pennsylvania Hospital	Chief Medical Officer, "B"	Internal Medicine, Cardiology, Metabolism	Internal Medicine, Cardiology, Metabolism	1 to 3 weeks	June	Lectures, Clinics, Symposia, Round Table Discussions, Demonstrations, Conferences, Ward Rounds	Hospitals, out patient department	Med sch, in state	MD's	\$35 \$100	0	None
Philadelphia Med Soc	Philadelphia Co Med Soc	Director, P G Institute	Modern Therapy	Modern Therapy	5 days	April	Lectures	Hotel	Med sch and in state	MD's (senior medical students)	\$5 (no charge to Co Med Soc members)	3,021	None
Temple U Sch of Med	Temple U Sch of Med	Dean	Bronchoscopes, Laryngology	Bronchoscopes, Laryngology	2 weeks	3 courses yearly	Clinical	Hospital, out patient department	Med sch	MD's	\$50	30	None
U of Pennsylvania Grad Sch of Med	U of Pennsylvania Grad Sch of Med	Dean	General and Special	General and Special	1 to 16 weeks	1 through out year	Clinical	Medical School, hospitals, out patient department	Grad med sch	MD's	\$60 \$100	...	None
Woman's Med Coll of Pennsylvania	Woman's Med Coll of Pennsylvania	Dean	Preliminary, Clinical	Preliminary, Clinical	8 months	Through out year	Clinics, Demonstrations, Clinical Path Conferences, Dissection room privileges	Medical School, hospital, out patient department, laboratories	Med sch	MD's	\$100 \$300	2	None

TABLE 1.—CONTINUATION COURSES FOR PRACTICING PHYSICIANS, 1940-1941—Continued
B, Where There Are Ample Facilities for Clinical Instruction—Five or More Days

Location of Course	Sponsoring Agencies	Director of Program	Subjects	Duration of Course	Time Given	Type of Instruction	Facilities for Graduate Programs	Instructors	Eligible for Admission	Registration Fee and/or of M.D.'s Tuition	Approximate No. Attending	Additional Contributing Agencies and Funds
South Carolina Charleston	Med. Coll. of the St of South Carolina	Dean	Obstetrics, Pediatrics	2 weeks	Throughout year	Ward Clinics, Symposia, Clin Path Confs.	Medical College, hospital, outpatient department, laboratories	Med sch	M.D.'s	No	16	St Bd of Health, Federal funds
South Dakota Minneapolis, Minn.	U of St Bd of Health, U of Minn, Health Center for Continuation Study	Supt., St Bd of Health, Pierre	Obstetrics, Pediatrics, Venereal Disease	6 days	Varies	Lectures, Demonstrations, Clinics, Discussions	Center for Continuation Study of state	Med sch, out of state	M.D.'s	No ¹	64	U S Children's Bureau, U S Public Health Service
Tennessee Nashville	McHenry Med Coll	Chairman, Comm on P. G. Course	General Medicine, Surgery, Pediatrics, Obstetrics	2 weeks	June	Lectures, Clinics, Symposia, Demonstrations, Round Table Discussions, Ward Rounds	Medical College, hospital, outpatient department, laboratories	Med coll, in state	Negro M.D.'s	\$20	10	None
Texas Dallas and Austin	Vanderbilt U Sch of Med	Director, P G Instruction	General and Special	Varies	Throughout year	Didactic and Clinical	Medical School, hospital, outpatient department	Med sch	M.D.'s	None to \$100	...	None
Texas San Francisco, Calif	St Med Assn, St Dept of Health	Secretary, St Med Assn, Fort Worth	Obstetrics, Pediatrics	4 weeks	Spring	Lectures, Clinics, Symposia, Demonstrations, Round Table Discussions, Clin Path Confs.	Medical Schools, hospitals, outpatient departments	Med sch.	M.D.'s	No ¹	40	U of Texas Faculty of Med, Galveston, Baylor Univ. Coll. of Med., Dallas, Federal funds
Vermont Burlington	U of Vermont Coll of Med, St. Med Soc	Dean	Obstetrics and Pediatrics	1 and 2 weeks	Summer, Dec and Jan	Lectures, Clinics, Demonstrations	Medical School, hospital, outpatient department	Med sch	M.D.'s	No	18	U S Children's Bureau, St. Med. Assn.
Virginia Charlottesville	St Med Soc, U of Virginia Dept of Med	Exec Secretary, Dept of Clin and Med	Medicine	1 week	June	Lectures, Clinics, Symposia, Round Table Discussions, Clin Path Confs.	Medical College, hospital, outpatient department	Med coll.	M.D.'s	\$50	10	None
Richmond	Med Coll. of Virginia	Dean	General	2 weeks	June	Lectures, Clinics, Demonstrations, Round Table Discussions, Ward Rounds	Medical College, hospital, laboratories	Med sch, in state and out of state	M.D.'s	\$15	31	.....
Washington Portland, Ore	Wash St Dept of Health, Div. of Mat and Child Hygiene, St Med Assn, U of Oregon Med Sch	Chief, Div of Mat. and Child Hygiene	Obstetrics, Pediatrics	5 days	January	Lectures, Clinics, Round Table Discussions	Medical School, hospital, outpatient department, laboratories	Med sch, out of state	Negro M.D.'s	\$5-\$10	35	State of Virginia
Seattle	U of Washington, Nat Div., King Co Hosp Sys., King Co Med Soc, St. Med Assn.	Director, Univ. Health Center	Preliminary, General and Special	5 days	July	Lectures, Clinics, Symposia, Round Table Discussions, Demonstrations, Clin. Path Confs	University laboratories, hospital, outpatient department	Med sch, out of state	M.D.'s	\$10	275	.....
Wisconsin Madison	U of Wisconsin Med Sch, St. Med Soc	Dean	General and Special	1 to 5 months	Varies	Demonstrations, Clin. Path Confs, Round Table Discussions, Ward classes	Medical School, hospitals, laboratories	Med sch	M.D.'s	\$100-\$400	7	None

1. Medical manager or similar official offered physicians taking these courses
2. Courses offered on request of the College or for those preparing (either to meet requirements for membership in the College or certification by the American Board of Internal Medicine)
3. Free to any member of state medical society recommended by Chairman of National Welfare Committee.

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midwinter of 1940-1941. The committee on postgraduate courses of the college has outlined the following principles:

1. Intensive courses of two weeks' duration are most in demand.
2. Similar subjects should be given in alternate years at different institutions and localities.
3. Instruction should be organized at an appropriate level for the physicians registered.
4. The needs of the registrants should be known and the course planned accordingly.
5. Instructors should be fully qualified men of experience.

The American Academy of Ophthalmology and Otolaryngology has continued courses of instruction at the annual meetings of the academy. In August 1940 home study courses, through directed reading, in the fundamentals of ophthalmology and otolaryngology were started. These courses were intended primarily for residents in institutions which gave no formal instruction. In addition to this group, physicians preparing for certification and those practicing in smaller communities registered for the study course. A total of four hundred and sixty-five physicians subscribed, paying a fee of \$10 each.

The course was conducted as follows: Each month reading assignments in standard textbooks were given which would require between one and one and a half hours' study daily. At the end of each month twenty questions covering the assignments of the preceding month were sent to each registrant, answered, and then returned to the committee of the academy. Different groups of ophthalmologists and otolaryngologists over the country corrected the answers and graded the examinations and returned them to the registrants. Subjects included in the course were anatomy, histology, embryology, physiology, bacteriology, pathology, and biochemistry of the eye, ear, nose and throat, refraction, perimetry, optics, biomicroscopy, and hearing and vestibular tests. This course will be repeated beginning Aug. 1, 1941.

CONTINUATION STUDY FOR PRACTICING PHYSICIANS, 1940-1941

Opportunities provided for practicing physicians during the fiscal year ending July 1, 1941 are outlined in tables 1-A, pages 710-711; 1-B, pages 714-720, and table 2, pages 722-725. Courses reported in table 1-A were of a peripatetic character in that instruction was offered to the practicing physician in a number of different places in or near his local community. Centers listed in table 1-B provided ample facilities for clinical instruction. In the first type of course the instructors usually do most of the traveling, while in the latter the physician desiring continuation study frequently travels to the center where clinical teaching may be emphasized over longer periods.

ORGANIZATION AND ADMINISTRATION

Opportunities for continuing professional study for practicing physicians near their home communities held a prominent place in twenty-eight states. These programs reached a total of three hundred and eight towns. In four other courses given over the state, the number of centers was not reported. Of thirty-one sponsoring agencies, committees on postgraduate education of state medical societies, independently or with the department of health or university, supervised twenty-three programs. State health departments were active partici-

pants in sixteen courses, the extension divisions of five universities and four state tuberculosis and public health associations cooperated in bringing programs to the practitioner.

In centers where ample clinical facilities are available (table 1-B) graduate courses of less than one year's duration were offered in seventy-six centers located in thirty-three states and the District of Columbia. Ninety-nine agencies or combinations of agencies in forty states participated in the planning of programs, although courses sponsored by ten state agencies were given outside the state.

Of the medical schools of the country, forty-seven have given courses for practicing physicians during the past year, including six postgraduate schools or graduate departments of medical schools. Twenty-four health departments and nineteen state medical societies collaborated with the health departments or independently planned courses for the physicians of the state. In eleven instances hospitals were the agencies offering short periods of study. Other sponsors included five county medical societies, two academies of medicine, two universities not having medical departments, a clinical society, a national society and an institute of technology.

In medical school programs the deans were indicated as directing officer of about one half of the postgraduate courses. The head or a member of the department in which the study is offered often directed the course. Chairmen of postgraduate educational committees in universities and of medical associations, directors of departments of health and the chief of staff of several hospitals acted as administrators.

METHODS OF INSTRUCTION

Opportunities for instruction in obstetrics and pediatrics were prominent among the courses for physicians continuing professional study near their homes. Programs covering the general subjects of medicine and surgery were available in fourteen distinct areas, obstetrics and pediatrics in twelve, tuberculosis and communicable diseases in six and special subjects such as dermatology and syphilology, heart disease and cancer in six. Instruction was given at weekly intervals in fifteen of these courses, the number of classes varying from two to ten. Two courses were scheduled for six evenings and one for a period of from five to six days. One day programs for practitioners were arranged in nine of the courses. In addition to lectures and round table discussions, all but eight of the courses for physicians in their own communities were planned to include clinics, symposiums, demonstrations and conferences. Public buildings were utilized for lectures and discussion groups, and the facilities of hospitals were used for supplementary practical instruction in all but nine programs. The traveling faculties for these extramural courses were chosen about equally from within the state sponsoring the course and from an out of state position. Of these instructors, 80 per cent were from the faculties of medical schools.

The descriptions of all intensive courses gave evidence that clinical instruction was featured. The study of general medical subjects or the specialties was offered in various combinations by one third of the medical centers. In the specialty group, ophthalmology, otolaryngology, cardiology and syphilology appeared in the reports most often. Other special topics of study included allergy, aviation medicine, bronchoscopy, electrocardiology, endocrinology, esophagology, gastroscopy,

(Continued on page 725)

TABLE 2.—CLINICAL CONFERENCES, GRADUATE ASSEMBLIES AND STUDY COURSES, 1940-1941

Location of Course	Sponsoring Agencies	Director of Program	Subjects	Duration of Course	Time Given	Type of Instruction	Facilities for Graduate Programs	Instructors	Eligible for Admission	Registration Fee	Approximate No. M.D.'s Attending	Additional Contributing Agencies and Funds
Arkansas Little Rock	St. Med. Soc., Univ. of Arkansas Sch. of Med.	Chairman, Comm. on P. G. Instruction	General	2 days	Twice yearly	Lectures, Clinics, Symposiums, Round Table Discussions	Medical School, hospital, out-patient department, laboratory	Med. sch. in state and out of state	Co Med Soc members	\$5	250	None
California Los Angeles and San Francisco	Calif. Heart Assn.	Chairman, Local Program Comm.	Cardiology	3 days	November and December	Lectures, Clinics, Symposiums, Round Table Discussions, Movies	Public buildings, hospitals	Med. sch. in state	M.D.'s	\$5 (L.A.) \$15 (S.F.)	163	None
Stockton	San Joaquin Co. Med. Soc.	Chairman, Comm. on P. G. Activities	General	1 day weekly, 7 times	Fall	Lectures, Clinics, Symposiums	Hospitals	Med. sch. in state and out of state	M.D.'s	\$5	65	None
Colorado Grand Junction	St. Med. Soc., Mesa Co. Med. Soc.	Chairman, Western Slope Spring Clinics	General	1 day	Spring	Lectures, Discussions	Hotel	In state and out of state	M.D.'s	\$2	69	None
Pueblo	St. Med. Soc., Pueblo Co. Med. Soc.	Chairman, Pueblo Spring Clinics	General	2 days	Spring	Lectures, Clinics	Hotel	In state and out of state	M.D.'s	\$2	130	None
Connecticut New Haven	St. Med. Soc.	Chairman, Comm. on Clinical Congress	General and Special	3 days	September	Lectures, Symposiums, Discussions	Hospital and Med. Sch. Aud. toriums	Med. sch. in state and out of state	M.D.'s	\$3	700	Yale Univ. Sch. of Med.
District of Columbia Washington	Med. Soc. of D.C.	Chairman, Comm. on P. G. Education	Cardiovascular Dis., Office Surg. Procedures and Psychoneuroses	3 days, 4 sessions	September, January	Lectures	Hotel, Co. Med. Soc. building	Med. sch. in state and out of state	M.D.'s	None to \$1	1,505	None
Illinois Rock Island	Mississippi Valley Med. Soc.	Secretary	General	3 days	September	Lectures, Discussions, Exhibits	Hotel	Med. sch. in state and out of state	M.D.'s	\$1	303	.....
Indiana Indianapolis	Indiana Univ. Sch. of Med.	Chairman, Dept. of P. G. Education	Pediatrics	1 day weekly, 4 times	March	Lectures, Clinical Discussions, Case Presentations	Medical School, hospitals	Med. sch. in state and out of state	M.D.'s	No	15	Federal funds
Iowa Iowa City	St. Dept. of Health, St. Univ. of Iowa Dept. of Prev. Med.	Director, St. Hygiene Lab.	Pneumonia Typing	2 days (repeated)	Fall	Lectures, Demonstrations, Laboratory Instruction	St. Hygiene Lab., St. Univ. Dept. Hyg. and P. H. Lab.	Med. sch.	M.D.'s and technicians	No	4	.....
Kansas Kansas City	Univ. of Kansas Sch. of Med., Ext. Division	Asst. to Dean	General	4 days	Spring	Lectures, Clinics, Symposiums, Clin. Path. Confs.	Medical School, hospitals, out-patient department, laboratories	Med. sch.	M.D.'s	No	136	.....
Louisiana New Orleans	New Orleans Grad. Med. Assembly	President	General	4 days	March	Lectures, Clinics, Round Table Discussions	Hospitals, hotel	Med. sch. and out of state	M.D.'s	\$10	1,000	None
Massachusetts Cambridge	St. Med. Assn. of Mass., N. H. & Vt. Med. and Vi.	Chairman, New England P. G. Assembly Comm.	General	2 days	November	Lectures	Theater, hall	Med. sch. and out of state	Licensed physicians	\$1	700	Harvard Univ.

Minnesota Minneapolis	St. Dept. of Health, St. Med. Assn., Univ. of Minn. Med. Sch.	Director, Div. of Child Hygiene	Gynecology, Gynecology, Pediatrics	3 days (each course)	Spring	Lectures, Symposia, Demonstrations, Round Table Discussions	Hospitals, U. of Minn. Center for Continuation Study	Med. sch., in state and out of state	M.D.'s	\$15 ¹	76	.....
	Univ. of Minnesota Dept. of P. G. Educ.	Director	General	3 days	Fall, Spring	Lectures, Clinics, Symposia, Demonstrations, Round Table Discussions	Hospitals, U. of Minn. Center for Continuation Study	Med. sch.	M.D.'s	\$2-\$15	110	Commonwealth Fund
Missouri Kansas City	Kansas City S. W. Clin. Soc.	Director of Clinics	General	4 days	Fall	Lectures, Round Table Discussions	Auditorium	Med. sch., in state and out of state	M.D.'s, medical students	\$5	1,000	Co. Med. Soc.
St. Louis	St. Louis Clinics	President	General	1 day	May	Lectures, Clinics, Demonstrations, Round Table Discussions, Clin. Path. Confs.	Public buildings	Med. sch. and out of state	M.D.'s	\$10	100	None
Nebraska Omaha	Omaha Med. West Clin. Soc.	Secretary-Director of Clinics	General	5 days	October	Lectures, Clinics, Discussions	Hotel	Med. sch., in state and out of state	M.D.'s	\$5	980	Dues from members
New Jersey Newark	St. Med. Soc.	General Chairman, Fall Clin. Conf.	General	2 days	November	Lectures, Clinics, Demonstrations, Round Table Discussions, Clin. Path. Confs.	Academy building, hospitals	In state	M.D.'s	No	350	Essex Co. Med. Soc.
New York Albany	St. Dept. of Health, Albany Med. Coll.	Director, Ext. Course in Public Health	Public Health	2 days plus 11 field trips	Throughout year	Correspondence Course, Clinics, Demonstrations, Conferences, Field Trips	Hospitals, laboratories	Med. sch., health officers, lab. directors	Licensed physicians	\$70	110	None
New York City	New York Tuberculosis and Health Assn.	Soc., Industrial and Social Hyg. Council, Chairman, New York Heart Assn.	Industrial Hygiene, Venereal Disease Cardiology	1 day	Varies	Symposiums	Academy of Medicine	Med. sch.	M.D.'s and others	No	...	.....
				7 sessions	Throughout year	Lectures	Medical Society buildings	Med. sch., in state and out of state	M.D.'s and medical students	No	...	None
				1 session	Throughout year	Lectures, Symposia, Demonstrations	Hospitals, medical college	Med. coll. and in state U. B. specialists	M.D.'s	No	500	Local T. B. Assn.
Rochester	Univ. of Rochester Sch. of Med., Bausch and Lomb Optical Co.	Assoc. Prof. of Ophthalmology	Ophthalmology	2 days	August	Lectures, Clinics, Demonstrations, Round Table Discussions, Clin. Path. Confs.	Medical School, hospital, outpatient department	Med. sch., in state and out of state	M.D.'s	\$10	65	None
North Carolina Durham	Duke Univ. Sch. of Med.	Dean	Diseases of Metabolism and the Blood Forming Organs	3 days	October	Lectures, Clinics, Symposiums	Medical School, hospital	Out of state	M.D.'s	No	514	State Health Dept., federal funds
	St. Dept. of Public Instr., Div. of Coop. in Race and Relations	Secretary, Subcomm. for Negro Health and Educ.	General	1 day	October	Lectures, Clinics, Demonstrations, Symposiums	Hospital	Med. sch.	Negro M.D.'s	\$5	60	Duke Univ., Univ. of North Carolina
Ohio Cleveland	Amer. Acad. of Ophthalmology and Otolaryngology	Secretary for Instruction	Ophthalmology, Otolaryngology	3 days	October	Lectures, Demonstrations, Discussions, Slides	Hotel	Out of state	Members and guests	\$6-\$12	1,700	None
	Western Reserve Univ. Sch. of Med., City Hospital	Chairman, Comm. on Programs	Practical Reviews of Special Subjects	14 lectures	October	Lectures, Demonstrations, Discussions	Hospital	Med. sch., hospital staff	M.D.'s	No	48	None

TABLE 2.—CLINICAL CONFERENCES, GRADUATE ASSEMBLIES AND STUDY COURSES, 1940-941—Continued

Location of Course	Sponsoring Agencies	Director of Program	Subjects	Duration of Course	Time Given	Type of Instruction	Facilities for Graduate Programs	Instructors	Eligible for Admission	Registration Fee	Approximate No. Attending	Additional Contributing Agencies and Funds
Oklahoma City	Oklahoma City Clin Soc.	Director of Clinics	General	4 days	Fall	Lectures, Symposia, Round Table Discussions	Public buildings	Med sch., in state and out of state	M D's	\$10	549	None
Pennsylvania Philadelphia	Merck Hospital	Medical Director	General	3 days	May	Lectures	Hospital	Med sch., in state and out of state	M D's, students, dentists	No	146	None
	Germania Dispensary and Hosp	Director of Laboratories	General	3 days	Winter	Lectures, Clinics, Demonstrations, Round Table Discussions, Clin Path Confs	Hospital, laboratory	Med sch and in state	M D's	No	88	None
	Philadelphia Co Med Soc	Committees	Ophthalmology, Diabetic, Electrocardiography	5 to 6 sessions	Through out year	Lectures, Discussions, Demonstrations Seminars	Medical Society Building	Med sch and in state	M D's	No	500	None
	St Med Soc	Chairman, Steering Comm	Tuberculosis, Syphilology, Mental and Child Health	1 day	April	Lectures, Clinics	Hospital	Med sch	Negro M D's			Phila Gen Hosp
Pittsburgh	Allegheny Co Med Soc	Chairman, Graduate Comm	General	1 day weekly, 5 to 10 times	Varies	Clinics, Demonstrations	Medical School, hospitals, clinics, outpatient depts	Med sch and in state	M D's	\$2.50	10 (per course)	None
South Carolina Orangeburg	St P B Assn, St Board of Health, State College	Director of Negro Program	Obstetrics, Pediatrics, Tuberculosis, Venereal Diseases	3 days	January	Lectures, Round Table Discussions, Clinics, Consultations	College	In state and out of state	Negro M D's	No	31	U S P H S, Nat'l T B Assn
Tennessee Knoxville	Knox Co Med Soc	Secretary, Town Valley P G Med Assembly	General	3 days	June	Lectures, Round Table Discussions	Hotel	Med sch, out of state	Co Med Soc members	\$4	350	None
Memphis	Mid South P G Med Assembly	Secretary	General	4 days	February	Lectures, Round Table Discussions	Hotel	Med sch, in state and out of state	M D's, students	\$5	800	None
Nashville	National Round for Infantile Paralysis, Vanderbilt Univ Sch of Med	President, N Y C	Poliomyelitis	6 sessions	April	Lectures	Medical School	Out of state	M D's and guests	No	..	None
Texas Dallas	Dallas Southern Clin Soc	Director of Clinics	General, Special	4 days and 3 days	March, June	Lectures, Clinics, Symposia, Demonstrations, Round Table Discussions, Clin Path Confs	Hospitals, hotel, clinics	Med sch, in state and out of state	Co Med Soc members	\$15, \$5	825	Baylor Univ Coll of Med
Houston	P G Med Assn of S. Texas	General Chairman, Program Comm	Medicine Specialties	3 days	December	Lectures, Round Table Discussions, Symposia	Hotel	Med sch and out of state	M D's, interns, students	\$10	600	None
Marshall	N F Texas P G Med Assembly	Chairman	General	1 day	December	Lectures, Round Table Discussions, Symposia	Hotel	Med sch, in state	M D's	\$1	50	N F Texas Med. Assn
Pratch Ark	St Dept of Health, Texas P B Assn	Assoc Sec, P B Assn	Tuberculosis, Syphilis, Obstetrics, Venereal Diseases	4 days	March	Lectures, Clinics, Demonstrations	Hospital, lecture rooms of St Coll	Med sch, in state and out of state	Negro M D's	No	62	Pratch View St Coll, Nat'l T B Assn
San Antonio	International P G Med Assembly	Chairman, Program Comm	General	3 days	January	Lectures, Round Table Discussions, Scientific Exhibits	Hotel	Med sch out of state	M D's	No	800	None

(Continued from page 721)

State	Inst. Name	Inst. Address	General	Days	Varies	Lectures, Clinics, Symposia, Demonstrations, Round Table Discussions, Clin. Path. Conf.	Medical School, hospital, outpatient dept.	Med. sch., in state and out of state	M.D.'s	No	400	St. Bd. Health
Utah	Salt Lake City	St. Med. Assn. Univ. of Utah Med. Sch.	General	3 days	Varies	Lectures, Clinics, Symposia, Demonstrations, Round Table Discussions, Clin. Path. Conf.	Medical School, hospital, outpatient dept.	Med. sch., in state and out of state	M.D.'s	No	400	St. Bd. Health
Vermont	Burlington	St. Med. Soc., Univ. of Vermont Coll. of Med.	General Medicine	3 days	Spring	Lectures, Clinics, Symposia, Demonstrations, Round Table Discussions, Clin. Path. Conf.	Hospital, Med. Coll., outpatient department	Med. sch., in state and out of state	M.D.'s, students	No	135	None
Virginia	Charlottesville	Univ. of Virginia Dept. of Med., St. Med. Soc.	General	1 and 2 days	Spring and Fall	Lectures, Clinics, Symposia	Medical School, hospital	Med. sch., out of state	M.D.'s	No	160	None
University		Univ. of Virginia Dept. of Med., St. Med. Soc.	Ophthalmology, Otolaryngology	4 days	December	Lectures, Clinics, Round Table Discussions, Clin. Path. Conf.	Medical School, hospital, ambulatory center	Med. sch., in state and out of state	M.D.'s	\$15 725	45	None
Washington	Spokane	Pacific N. W. Med. Assn.	General	1 day	June	Lectures, Round Table Discussions	Hotel	Med. sch. and out of state	M.D.'s	\$12	329	St. Med. Soc.
Wisconsin	Milwaukee	Med. Soc. of Milwaukee Co.	Allergy, Geriatrics	1 day weekly, 4 times	Spring and Fall	Lectures, Clinics	Medical School auditorium, hospital	Med. sch., in state and out of state	Co. Med. Soc. members	None, \$2	250	Marquette U. Med. Sch., Co. and Children's Hosps.

1. Stipend to cover registration fees and per diem expense.

gynecology, hematology, industrial medicine, infections, metabolism, physical therapy, modern therapy, nutrition, orthopedics, peripheral vascular diseases, parasitology, psychology, psychiatry, public health, radiology, silicosis, tropical medicine, tuberculosis, urology and venereal disease. Special courses not enumerated were also available at eighteen medical schools and universities. Courses in preclinical subjects were recorded on only nine questionnaires.

The duration of study in centers with clinical facilities varied from five days to one year. Sixty-one courses were completed within three weeks or less, while eighteen lasted a month or more. In seven medical centers, enrolment for periods of from one week to a year was possible depending on the course length. Nine centers had no available courses of less than a month, the duration varying from one to nine months. Courses were available to practicing physicians throughout the year in thirty-five centers.

In only three instances was the work in the short intensive courses wholly didactic. In most cases it was indicated that all available facilities were advantageously used in the instruction. Clinical instruction and practical experience included laboratory and operative demonstrations, symposiums, assignment of patients, case presentation, clinical pathologic and roentgen ray conferences, movies and bedside teaching. As particular experience in special courses, facilities were utilized for dog surgery, laboratory experience, antepartum and postpartum clinics and home deliveries. In addition to medical schools and hospitals, laboratories, outpatient departments, clinics and local health units cooperated by placing their facilities at the disposal of the students.

The faculties of the medical schools offering continuation courses were called on for assistance in instruction in all but three courses. Many additional instructors were specialists in their fields, an equal number being chosen from within the state as from out of state.

REGISTRATION

All of these circuit courses had as their purpose the instruction of physicians practicing in or near the community in which the course was given. The practicing physician was invited to twenty-three of these courses; in eight others membership in the county medical society was a requirement. The number registered for any one course ranged from 37 in one state to 1,459 in another. The median number was 439 enrolled in extramural continuation study courses in any one state.

The M.D. degree was necessary for enrolment in all courses featuring clinical instruction, and in only a few were additional qualifications required. Medical students were admitted to two courses, and public health workers, hygienists and psychologists registered in four specialized courses. M.D.'s reported attending these continuation courses totaled 12,548. Small classes for intensive instruction and the individual use of clinical facilities were the rule. Fifty-four centers had registrations of less than 40; in fifteen the enrolment ranged from 40 to 75, in twelve from 75 to 200 and in thirteen over 200. In only six instances were more than 500 physicians registered, this enrolment usually indicating repeated short courses held in postgraduate schools or departments throughout the year. As an exception, the course in ophthalmology at George Washington University School of Medicine was given for over 500 physicians, and the course in aviation medicine for 170.

FINANCIAL SUPPORT

For twenty-four of the peripatetic continuation courses no charge to the physician was made. Only one fee was more than \$10, and in nine courses in which a registration fee was charged it was \$10 or less. Twenty-four state medical societies made substantial contributions to these programs. Federal funds were available through state agencies, and fifteen courses benefited. In the field instruction eight extension divisions of universities participated, and continued financial assistance was given in four instances by the Commonwealth Fund, the Rackham Fund and the Kellogg Foundation.

In continuation courses featuring clinical instruction of more than five days in one center the fees required ranged from a registration fee of \$2 to tuition of \$1,000. In twenty-three courses no fees were charged the individual; state departments of health used federal funds to defray the costs in nineteen of these. Funds secured from federal bureaus also assisted in financing seven courses for which a small registration fee was charged. Medical schools contributed most frequently, with state departments of health and state medical societies sharing expenses. Special contributions were made by the Bingham Associates Fund, the Commonwealth Fund of New York, the Rosenberg Foundation, the Rackham Fund, the Kellogg Foundation, the Mayo Foundation, the Trudeau Foundation and the Lillie Babbitt Hyde Foundation.

CLINICAL CONFERENCES, GRADUATE ASSEMBLIES
AND STUDY COURSES

In twenty-eight states and the District of Columbia graduate assemblies of less than five days and study courses were held during 1940-1941. These data are summarized in table 2, pages 722-725. Fifty-two reported assemblies or short lecture courses were held under the auspices of sixty-four agencies either independently or in collaboration. Fifteen state medical societies and thirteen medical schools sponsored conferences and assemblies. Six were planned by departments of welfare. In twelve instances postgraduate medical societies organized for the sole purpose of conducting assemblies were publicized as the sponsors. Several of these stemmed from county medical societies, and, in addition, committees of seven county medical societies directed such courses. Only four heart and tuberculosis associations reported this type of study, and three hospitals were responsible for conference courses. An especially appointed director of the clinics or chairman of the committee responsible for the assembly was reported for three fourths of the courses. In the remaining fourth in medical schools, hospitals and departments of health, the director was of the faculty or staff.

The majority of the large assemblies surveyed pertinent topics in general medicine and surgery, twenty-eight reporting this field covered in the lectures. Conferences devoted to more than one or two specialties were three in number. Scattered study courses sponsored by medical societies or agencies concentrating on certain fields included the varied subjects, as allergy, cardiology, electrocardiology, geriatrics, metabolism, industrial hygiene, obstetrics, office surgery, ophthalmology, otolaryngology, psychoneuroses, poliomyelitis, pneumonia typing, pediatrics, public health, tuberculosis and venereal disease. With one exception all

continuous conferences were of four days or less. Ten study and lecture courses were given intermittently over a month or more. The assemblies were usually held in centers large enough to accommodate the registrants and with facilities for clinical and practical work and for scientific exhibits. The programs were distributed rather evenly throughout the year, sixteen scheduled in the fall, ten during the winter and eighteen in the spring. A few others were given in the summer, and some in metropolitan areas were repeated throughout the year.

Of the fifty-two courses, eighteen were confined to didactic instruction. The remainder planned to utilize the facilities of hospitals, medical schools, outpatient departments and laboratories to conduct clinics, demonstrations, clinical pathologic conferences and symposiums. Faculty members of medical schools took an active part in forty-two of the courses. Instructors not from faculties of medicine were evenly divided between physicians from the state and physicians engaged from outside the state.

Practicing physicians were eligible for admission to all the graduate assemblies, and four courses sponsored by medical societies required membership in the county medical society. Medical students were invited to be guests at six of the courses. Registration fees ranged from \$1 to \$50 in twenty-five courses; in seventeen no registration fee was charged. The largest attendance recorded at any one assembly was 1,700; one class had but 4 physicians enrolled. The medical attendance during the past year was 209.

Thirty-six medical and clinical societies supported programs of this type; the departments of health through federal funds gave financial assistance to six. Four tuberculosis associations and thirteen medical schools supported, in part, as many courses.

OPPORTUNITIES FOR NEGRO PHYSICIANS

The Flint-Goodridge Hospital of Dillard University, New Orleans, has completed the first five years of the annual two week postgraduate course for Negro physicians. Approximately 20 per cent of these physicians of ten Southern states have attended one or more sessions. The faculty is composed chiefly of members of the medical school faculties of Tulane University of Louisiana and Louisiana State University, New Orleans, in addition to visiting lecturers.

The Meharry Medical College, Nashville, Tenn., during August and September 1940 gave a series of short courses in pediatrics for eighteen physicians sent to the college by the Division of Maternal and Child Health, the Department of Health of South Carolina. Each course was of two weeks' duration and registration for each was limited to five physicians. Round table discussions and bedside and clinic practice under close supervision were included.

The first postgraduate assembly for Negro physicians in South Carolina was held at State College, Orangeburg, over three days in January 1941. The National Tuberculosis Association, the U. S. Public Health Service and five South Carolina organizations sponsored the assembly. Lectures in obstetrics, pediatrics, tuberculosis and venereal diseases were given by five South Carolina and four out of state physicians.

The success of the first annual Postgraduate Institute for Negro Physicians held in Pittsburgh prompted repetition of the four day meeting in Philadelphia during

April 1941. Subjects included were tuberculosis, syphilis, child health and maternal welfare. The institutes were sponsored by the Medical Society of the State of Pennsylvania.

Short courses of from one to two weeks were given at Tuskegee Institute, Alabama, at the University of Georgia School of Medicine and at the Medical College of Virginia.

SUMMARY

1. Forty-four states and the District of Columbia provided a form of continuation study for physicians and, when clinical conferences were included, forty-five states and the District of Columbia offered graduate opportunities. From Delaware, New Hampshire and Wyoming no courses were reported.

2. There were twenty-eight states that offered continuation study for the practicing physician in or near their home community. There were twenty-eight distinct programs, which reached a total of three hundred and eight towns. State medical societies independently or with state boards of health sponsored the majority, while extension divisions of universities and state tuberculosis and public health associations cooperated in some states. Continuation study in centers where there are ample clinical facilities were offered in seventy-six centers located in thirty-three states and the District of Columbia. Ninety-nine agencies or combinations of agencies in forty states participated in the planning of the programs, although courses sponsored by ten state agencies were given outside the state. Medical schools offered more than half of the courses, including postgraduate schools or graduate departments of medical schools. Second in sponsoring programs were state health departments, while state medical societies collaborated with health departments or independently planned courses for the physicians of the state.

3. The approximate attendance at these circuit courses, centralized clinical courses and graduate assemblies totaled 43,621. The individual registration of these groups in the order named was 14,063, 12,548 and 17,010.

4. The study of general medical and surgical subjects or the various specialties or subspecialties in various combinations were offered. Clinical instruction and practical experience included laboratory and operative demonstrations, symposiums, assignment of patients, case presentation, clinical pathologic and roentgen ray conferences, movies and bedside teaching.

5. Out of state instructors participated as frequently as physicians of the state. Faculties of medical schools contributed 80 per cent of the instructors for the extramural courses and conducted most of the instruction in which clinical material was featured over five days or more.

6. Registration fees were charged infrequently for those courses offered in smaller communities, and in only one instance was a fee of more than \$10 charged. For graduate programs featuring clinical instruction at one center, fees ranged from \$2 to \$1,000.

SCIENTIFIC SOCIETIES

Organizations holding scientific sessions not primarily graduate assemblies, but of specific value to the practicing physician, numbered one hundred and seventy-eight. The annual scientific program of the American Medical Association was the climax of sessions in forty-seven states, the District of Columbia, Hawaii, the Philippines and Puerto Rico. National societies representing all of the specialties held seventy-seven meetings of from one to six days' duration. Twenty-five interstate agencies sponsored meetings, as did several special state and metropolitan organizations.

APPROVED EXAMINING BOARDS IN MEDICAL SPECIALTIES

At the annual session of the American Medical Association in 1933 the House of Delegates authorized the Council on Medical Education and Hospitals to formulate standards and officially approve such certifying boards in the specialties as would meet these requirements. Examining and certifying boards had already been established in ophthalmology, otolaryngology, obstetrics and gynecology and in dermatology and syphilology, but it was felt that there was need for a national and uniform standard governing all fields of medical practice in order that properly qualified physicians might readily be differentiated from the self-appointed specialists. The resolution of the House of Delegates urged that the machinery of the American Medical Association, including the publication of the American Medical Directory, be used in furthering the work of boards accredited under this plan.

Standards governing the approval of specialty boards were formulated by the Council and approved by the House of Delegates in 1934. These standards relating to the organization and operation of these boards contain also the minimum qualifications required for certification as a specialist. The latter include graduation from an approved medical school, an internship of not

less than one year in a hospital acceptable to the Council, and a period of specialized training in a selected field.

Approved Examining Boards in Medical Specialties

Key No A B	Name of Board	Year of Incorporation	Certificates Awarded* Total Issued to	
			March 1, 1940	July 1, 1941
1	American Board of Pediatrics	1923	1,370	1,710
2	American Board of Psychiatry and Neurol ogy	1934	852	1,140
3	American Board of Orthopaedic Surgery	1934	652	704
4	American Board of Dermatology and Surgery	1932	492	539
5 A	. . . . .	1934	1,404	1,691
6 A	. . . . .	1935	677	784
7	American Board of Obstetrics and Gynecology	1920	1,051	1,469
8 Amer	. . . . .	1936	2,178	2,679**
9 Amer	. . . . .	1936	766	855
10 Amer	. . . . .	1937	1,766	1,875
11	American Board of Otolaryngology	1924	2,977	3,265
12	American Board of Surgery	1917	1,274	1,701
13	American Board of Anesthesiology	1935	86	132
14	American Board of Plastic Surgery	1937	169	169
15	American Board of Neurological Surgery	1940	..	85
Totals			15,791	18,617

* Active diplomates.

** Certification in the subspecialties: Allergy 59; cardiovascular disease 56; gastroenterology 11; tuberculosis 9; total, 125.

Fifteen specialty boards, eleven of which have been organized since 1933, meet the standards of the Council and are now fully approved by the Council, representing the following specialties:

Anesthesiology	Pathology
Dermatology and Syphilology	Pediatrics
Internal Medicine	Plastic Surgery
Neurological Surgery	Psychiatry and Neurology
Obstetrics and Gynecology	Radiology
Ophthalmology	Surgery
Orthopaedic Surgery	Urology
Otolaryngology	

The American Board of Plastic Surgery has not as yet examined any candidates, although certificates have been issued to those in the founders' group. All other boards regularly hold examinations for certification. The dates of examinations of these boards are published in *THE JOURNAL* every other week. To conserve space in the biographic section of the American Medical Directory, a key number has been assigned to each board. Those certified by these boards, with the exception of plastic surgery and neurological surgery, are so identified in the sixteenth edition of the Directory. The American Board of Plastic Surgery had expressed the desire not to credit in this edition its diplomates, since all eligible had not had an opportunity to receive certification, while the American Board of Neurological Surgery was incorporated after publication of the Directory.

Final action was taken in regard to the recognition of proctologists by the American Board of Surgery on May 1 last. The American Board of Surgery will now recognize those qualified in the field of proctology, provided such applicants meet the same requirements as exacted of those wishing to qualify in general surgery and pass the same examination as is required of the board's regular applicants. In addition to this, those desiring to qualify in the field of proctologic surgery will be required to pass an additional clinical test to be given by a committee representing the proctologic field immediately following the examination in part II as given by this board. The Council on Medical Education and Hospitals approved this arrangement.

The American Board of Internal Medicine, under a somewhat similar arrangement, has certified specialists in allergy, cardiovascular disease, gastroenterology and tuberculosis.

The identifying numerical symbols of the boards, the year incorporated, the number of certificates awarded up to March 1, 1940 and July 1, 1941, respectively, appear in the accompanying tabulation. The number certified by some of the boards has been reduced by death. Recorded therefore are the active diplomates.

On July 1, 1941 there were 18,645 physicians certified by the fifteen boards in operation at that time. In 1940 on March 1, 15,594 had been certified, and 3,051 for the following sixteen months. In internal medicine 2,679 physicians have been certified and in surgery 1,703. These boards have been operating less than five years. The greatest number certified by any one board were 3,265 who received the certificate of the American Board of Otolaryngology since its organization in 1924. This is the second oldest board in existence.

Each of these boards has published a booklet containing a brief statement regarding its organization, personnel, purposes and qualifications for eligibility for certification. The data contained in these announcements are reproduced herewith.

AMERICAN BOARD OF ANESTHESIOLOGY, Inc.

RALPH M. WATERS, President, Madison, Wis.
HENRY S. RUTH, Vice President, Merion Station, Pa.
PAUL M. WOOD, Secretary-Treasurer, 745 Fifth Avenue, New York.
JOHN S. LUNDY, Rochester, Minn.
EMERY A. ROVENSTINE, New York.
HARRY BOYD STEWART, Tulsa, Okla.
RALPH M. TOVELL, Hartford, Conn.
PHILIP D. WOODBRIDGE, New Haven, Conn.
CHARLES F. MCCUSKEY, Glendale, Calif.

HISTORY

The plan for this organization was devised to conform with those of other examining boards in medical specialties, by a committee representing the American Society of Anesthetists, Inc., the American Society of Regional Anesthesia, Inc., and the Section on Surgery of the American Medical Association. These organizations adopted the tentative plans submitted, and the formation of the American Board of Anesthesiology, Inc., an affiliate of the American Board of Surgery, Inc., was completed on June 2, 1937. The Advisory Board for Medical Specialties, and the Council on Medical Education and Hospitals of the American Medical Association approved the affiliation in 1938.

In 1941 the Advisory Board for Medical Specialties approved the establishment of the American Board of Anesthesiology, Inc., as a separate major board, with the unanimous consent of the participating societies and the surgical boards which are members of the Advisory Board.

Diplomates of this Board will be designated "A.B. 13" in the Directory and Biographical Departments of the American Medical Association.

PURPOSES

1. To establish criteria of fitness to be designated a specialist in the practice of anesthesiology.
2. To improve educational facilities and practice in medical schools and hospitals, and furnish lists of these, together with lists of individual instructors who give adequate instruction and training in anesthesiology.
3. To arrange, control, and conduct examinations to determine the qualifications, and grant a certificate to those who voluntarily apply and meet the required standards. Such certification will serve to provide the public and the professions with the opportunity to select the best available service. (Conferring of degrees is a prerogative of the universities, and the Board of Anesthesiology makes no attempt to grant degrees, regulate or control the practice of anesthesiology in any way whatsoever, by license or restriction.)

VALUE OF CERTIFICATE

The organizations which participate in forming this board and sponsoring the activities as well as other societies or institutions, attach considerable importance to its certificate. The medical and lay public, as well as hospital directors, utilize the certification by this board in determining those who are well qualified as specialists in anesthesiology.

Although the Directory of the American Medical Association indicates those practicing in the various specialties the lists of holders of certification by specialty boards are available in the form of the Directory of Medical Specialists.

The American Board of Anesthesiology will cooperate with institutions and individuals in preparing plans for instruction in anesthesiology and in offering suggestions for the organization of new departments in the specialty.

QUALIFICATIONS FOR ELIGIBILITY TO CERTIFICATION

- A. General.—1. An applicant's moral and ethical standing in the profession must be satisfactory to the entire board. The board must be assured that the applicant is engaged in the practice of anesthesiology as a specialty and that he intends to continue to be so engaged.
2. Membership is required in the American Medical Association or membership in such other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association. Membership in other societies shall not be required.
3. Practice must be limited to anesthesiology.
4. In exceptional instances the board may, in its discretion, accept for examination candidates who have met all the preliminary requirements and have clearly demonstrated their identity as an anesthetist over a period of years but whose formal training does not comply with the full requirements to be exacted in the future.

B. *Professional Standing*.—1. An applicant must be a graduate of a grade A school in the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association, or a graduate of an approved foreign school.

2. Satisfactory evidence must be supplied of completion of an internship of not less than one year in a hospital approved by the same council, or its equivalent in the opinion of the board.

3. An applicant must establish in a manner satisfactory to the Board of Anesthesiology: that he is a physician duly licensed by law to practice medicine; that he is of high ethical and professional standing, and that he has received adequate special training in anesthesiology.

C. *Special Training and Practice*.—1. Before certification the candidate must have had an active experience limited to anesthesiology of not less than five (5) calendar years (including period of training).

2. The board recommends the inclusion of at least two years of carefully supervised instruction in the clinical phases of anesthesiology in hospital clinics, dispensaries, and diagnostic laboratories recognized by the Council on Medical Education and Hospitals of the American Medical Association as competent in the teaching and practice of anesthesiology. In addition, instruction in anatomy, physiology, pharmacology, biochemistry and other basic sciences which are necessary to the proper understanding of the problems involved in the specialty of anesthesiology is required.

(The board believes that for those entering the specialty after Jan. 1, 1944, the facilities for special training in anesthesiology will be available and such training will be sufficiently standardized that special training in anesthesiology may be interpreted to include after that date:

(a) A period of study, after the internship, of not less than three years in clinics, dispensaries, hospitals, and laboratories recognized by the Council on Medical Education and Hospitals of the American Medical Association as competent to provide a satisfactory training in the special field of anesthesiology.)

EXAMINATIONS

The qualifying examination will be divided into Part I, written, Part II, oral, and Part III, practical.

PART I

1. An applicant, to be eligible for Part I, must meet all requirements and his credentials must be approved by the board.

2. At the board's discretion a candidate may apply for certification and may take the written examination on basic science and clinical practice on the completion of two years of his courses of special training. Subsequently it shall be necessary for him to await the prescribed length of time to proceed with further examinations. Candidates who successfully pass Part I examinations (and satisfy the time requirement) proceed automatically to Part II examinations.

3. Part I may be given simultaneously in several centers, throughout the United States, which the board may determine suitable for the purpose.

PART II

1. In order to be eligible for Part II, a candidate must have successfully passed Part I in addition to having met the necessary requirements and having presented definite evidence of an adequate experience in anesthesiology satisfactory to the board.

2. It is probable that Part II examinations will be held near the time and at the place of the annual convention of the American Medical Association. Later, however, as the demand grows, it may be necessary to establish subsidiary centers where this part may be held.

PART III

1. It is believed that the practical examination in this field is slightly different from that in most specialties. The examiners will observe the work of the candidates in their own or similar operating room surroundings, their relations to other staff members, and investigate their professional standing.

CONDUCT OF EXAMINATION

Carefully conducted and thorough examinations will be required of candidates. The aim will be to avoid unduly exacting standards above present facilities for study and practice in anesthesiology, and on the other hand, to prevent laxity, which would nullify the main purpose of the certificate. Thus the type of the examination will depend on a careful review of the work done, years of practice, special courses of study, and professional standing of the applicant.

Written examinations will cover such topics as anatomy, biochemistry, physiology, pharmacology, pathology, physical diagnosis, therapeutics, clinical practice, and public health in relation to anesthesiology.

Oral examinations will cover topics in the above list especially as to their clinical application.

Practical demonstrations will be required of the management of the candidate's clinical practice in his local surroundings. This may include inspection of clinical records, records of departmental activities, library facilities, available apparatus, and demonstrations of application of anesthetic agents, methods and all techniques included in anesthesiology.

GRADES

A candidate must receive a passing average for each part, to be entitled to certification. No candidate shall pass a part who does not receive a grade of 60 per cent or more in each subject of such part. An average grade of 75 per cent shall be required for passing.

A candidate who fails in his examination in Part I will have his papers reviewed by the entire board and will be entitled to reexamination at yearly intervals for two consecutive years without further payment of fee. The board may, however, for sufficient reason, deny a candidate the privilege of reexamination.

Applicants who fail to exercise the examination privilege within three (3) years of the date of filing the application are required to file a new application and pay a new application fee.

The fee shall be \$75. Twenty-five dollars shall be paid on filing the application (of which sum \$15 will be returned if the candidate is not accepted for examination) and the remaining \$50 shall be paid before taking the examinations.

This board is a nonprofit organization, all fees to be used to extend the existing facilities for training in anesthesiology, after deducting necessary expenses for maintenance of the office, and the conducting of examinations. The board reserves the right to increase the fee when found necessary.

REVOCATION OF CERTIFICATE

All certificates issued by the board shall be subject to revocation by the board at any time, in case it shall determine in its sole judgment that a candidate who has received a certificate either was not properly qualified to receive it or has become disqualified since its receipt.

ADDITIONAL INFORMATION

Every candidate applying for certification must personally appear before the board before being certified.

Application blanks must be made on special blanks which may be procured from the Secretary of the American Board of Anesthesiology. They must be completely and accurately filled out, accompanied by the other required credentials, and filed with the secretary of the board at least ninety days prior to the date of examination.

The Council cannot make any eligibility rulings. These are made only by the Committee on Preliminary Examinations and the Committee on Requirements and Credentials after reviewing the candidate's formal application. Applications cannot be considered for classification and action by these committees unless accompanied by an application fee of \$25.00, \$10.00 of which is not returnable.

Application blanks contain the following statement:

"I hereby make application to the American Board of Anesthesiology, Inc., for the issuance to me of a Certificate of Qualification as a Specialist in Anesthesiology and for examination relative thereto, all in accordance with and subject to its rules and regulations, and enclose fee of seventy-five dollars (\$75.00).¹ I agree to disqualification from examination or from the issuance of a Certificate of Qualification or to surrender of such certificate as directed by the board in the event that any of the statements hereinafter made by me are false or in the event that any of the rules governing such examinations are violated by me or in the event that I did not comply with or shall violate any of the provisions of the Certificate of Incorporation or Constitution and By-Laws² of the American Board of Anesthesiology, Inc., or both, as then constituted. I agree to hold the American Board of Anesthesiology, Inc., its members, examiners, officers and agents free from any damage or complaint by reason of any action they, or any of them, may take in connection with this application, such examinations, the grade or grades given with respect to any examination, or the failure of said board or corporation to issue to me such Certificate of Qualification."

Proper forms for making application and other information will be furnished by the secretary-treasurer.

1. This may be paid as follows: \$25 with application (\$10 registration fee not returnable) and \$50 before examination.

2. Ignorance of the provisions of the Certificate of Incorporation and of the Constitution and By-Laws is not considered by the board to be a valid excuse for violations.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY

HOWARD FOX, President, New York.
FREDERICK D. WEIDMAN, Vice President, Philadelphia.
C. GUY LANE, Secretary-Treasurer, 416 Marlboro Street, Boston.
CHARLES C. DENNIE, Kansas City, Mo.
JOSEPH GARDNER HOPKINS, New York.
HENRY E. MICHELSON, Minneapolis.
PAUL A. O'LEARY, Rochester, Minn.
FRANCIS E. SENEAR, Chicago.
JESSE BEDFORD SHELMIER, Dallas, Texas.

ORGANIZATION

At the 1931 meeting of the American Dermatological Association, a committee was appointed to determine the advisability of forming an American board for the certification of competent practitioners in this specialty similar to boards created by the ophthalmologists, the otolaryngologists and by the obstetricians and gynecologists. A similar committee was appointed by the Section on Dermatology and Syphilology of the American Medical Association at its meeting in the same year. A favorable report was rendered by each committee at the 1932 meeting of each of the above organizations.

The American Dermatological Association voted to accept the report of this committee, and the president appointed the following four members to represent the association on the newly formed American Board of Dermatology and Syphilology:

Dr. Jay F. Schamberg, Philadelphia.
Dr. Howard Fox, New York.
Dr. Harold N. Cole, Cleveland.
Dr. Arthur W. Stillians, Chicago.

The Section on Dermatology and Syphilology of the American Medical Association also accepted the report of its committee and the chairman appointed the following members to serve as its representatives:

Dr. Howard Morrow, San Francisco.
Dr. William H. Mook, St. Louis.
Dr. George M. MacKee, New York.
Dr. C. Guy Lane, Boston.

The first meeting of the board was held in New Orleans on May 11, 1932, at which time officers were elected. At another meeting held on Nov. 11, 1932, in Philadelphia the organization was completed and resolutions were adopted concerning the proper procedure to be followed by the board. On Nov. 29, 1932, the board was incorporated under the laws of the state of Delaware.

In 1937 the American Academy of Dermatology and Syphilology was formed, and in November 1939 a plan was finally approved whereby the board would be composed of three representatives from each national dermatologic society, viz., the American Dermatological Association, the Section on Dermatology and Syphilology of the American Medical Association, and the American Academy of Dermatology and Syphilology.

PURPOSES

The board has been established primarily to determine the competence of physicians who specialize in dermatology and syphilology. It will therefore establish minimum standards of education and training, examine applicants and certify properly qualified specialists in this field, prepare lists of those qualified and arrange for the publication of such lists. Because of its interest also in the fulfillment of these standards, it will attempt to stimulate the development of adequate training facilities, investigate institutions and individuals planning to train specialists, and lend its aid to the approval of those institutions and individuals offering adequate training in the specialty. The board, in addition, will always be glad to advise physicians desiring to enter this special field of medicine.

REQUIREMENTS FOR CERTIFICATION

I. General Requirements

1. High ethical and professional standing.
2. Graduation from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association.
3. Satisfactory completion of an internship of not less than one year in a hospital approved by the same Council.
4. A license to practice medicine.
5. Membership in the American Medical Association or membership in a similar society recognized as having the same purpose as the American Medical Association.
6. Citizenship in the United States or citizenship—meaning native citizens—in Canada and Cuba.

II. Special Requirements

Applicants for certification by the board are classed in two groups as follows:

Group A consists of physicians who have limited their practice mainly to dermatology and syphilology for ten or more years, including a period of training satisfactory to the board. This group will, in all probability, be abolished in 1949.

Group B consists of physicians who have practiced dermatology and syphilology at least five years, including their period of training. For such physicians who will be examined up to Jan. 1, 1945, the board will require two years of full-time planned training in clinical dermatology including adequate instruction in the following subjects as related to the skin: histopathology, mycology, allergy and physics as related to physical therapy.

III. Future Special Requirements

For candidates beginning their training after Jan. 1, 1940, who will appear for examination subsequent to Jan. 1, 1945, additional requirements are effective in accordance with the program recommended to the various specialty boards by the Advisory Board for Medical Specialties. These minimum requirements of special training for admission to examination are as follows:

1. A period of study, after the internship, of not less than three years in clinics, dispensaries, hospitals or laboratories recognized by the Council on Medical Education and Hospitals of the American Medical Association and approved by the American Board of Dermatology and Syphilology as competent to provide a satisfactory training in dermatology and syphilology. This period of specialized training shall include:

(a) Graduate training in the basic medical sciences which are necessary to the proper understanding and treatment involved in this specialty.

Instruction in the following fundamental subjects as related to the skin is deemed advisable by the board: embryology, histology, chemistry, physiology, bacteriology, mycology, parasitology, pathology, immunology, serology, pharmacology and materia medica, and physics of physical therapy.

(b) An active experience of not less than eighteen months in hospitals, clinics, dispensaries or diagnostic laboratories recognized by the same Council and approved by the American Board of Dermatology and Syphilology as competent to provide an adequate preparation.

(c) Examinations, written and oral, in the clinical, laboratory and public health aspects of dermatology and syphilology.

2. An additional period of not less than two years of study and/or practice.

Therefore, for certification by this board, candidates beginning their training after Jan. 1, 1940 must plan for a three years course of systematic training.

APPLICATION AND FEE

The board desires to appraise the candidate's educational opportunities (premedical, medical and dermatologic), the character of the men under whom he has worked, his hospital and teaching positions, original investigations, contributions to dermatologic literature, membership in medical societies and local and general reputation.

For this purpose, application must be made on a special blank, which may be obtained from the secretary. No application will be considered unless made on the regular application blank. Applications should be filed early in order to obtain full advantage of the sets of histopathological slides which are available through the Army Medical Museum in Washington. The completed application should be sent, at least two months before the date of examination, to the secretary of the board, together with the required reprints, photographs and the fee of \$35. This fee will not be returned, and no application will be considered until the fee is received. This fee has been carefully computed and is used entirely for administrative purposes. Members of the board do not receive any compensation except for actual expenses connected with holding the examinations.

Make checks payable to American Board of Dermatology and Syphilology, Inc.

EXAMINATIONS

Applicants classified in group B will be required to pass a written examination. This written examination on clinical and laboratory subjects including cutaneous pathology will be held simultaneously at stated intervals in different parts of the country, approximately two months before the oral examination.

Applicants classified in both groups A and B will be required to pass an oral, clinical and laboratory examination. This examination will be conducted in a clinic or hospital ward where individual cases will be discussed with each candidate as

well as various subjects related to the skin such as histopathology, mycology, allergy and physics of physical therapy. The board reserves the right to add to this list other subjects within the field of dermatology and syphilology.

Examinations are designed to test the candidate's fitness to practice dermatology and syphilology as a specialty. The board will try especially to ascertain the breadth of his clinical experience, his knowledge of recent literature of dermatology and syphilology and his general qualifications as a specialist in this branch of medicine.

Whenever an applicant fails to pass the examination, the board, if requested, will make suggestions as to suitable courses of instruction for the purpose of overcoming deficiencies in the applicant's knowledge of this specialty.

Except in special circumstances, applicants shall take the examination within the year following the filing of application and the deposit of the fee.

The oral examination will be held near the time and place of the annual meeting of the American Academy of Dermatology and Syphilology. This examination will be held only at the time of regular meetings of the boards.

REEXAMINATIONS

If the candidate fails or is "conditioned" in an examination he will be admitted to a second examination after one year, but within three years, and must give sixty days' notice of his intention to appear for reexamination. If a candidate who has failed or has been conditioned does not appear for reexamination before the expiration of three years, he will be required to make a new application and pay an additional fee of \$35 before reexamination.

A candidate having failed twice must file a new application and pay an additional fee of \$35.

CERTIFICATES

A certificate will be issued to each candidate who meets the requirements of the board, to the effect that the holder of the certificate has had adequate training in dermatology and syphilology and has successfully fulfilled the requirements of the board.

It is expected that medical schools, hospitals and physicians, as well as the lay public, will utilize the certificate from this board as a proof of adequate preparation in the field of dermatology and syphilology, and of fitness of candidates for positions under their control. For this purpose lists of those holding certificates from the board will be available for inspection and will be published from time to time in the Directory of Medical Specialists. Diplomates will be identified in the Directory of the American Medical Association.

A certificate granted by this board does not of itself confer or purport to confer, any degree, or legal qualifications, privileges, or license to practice dermatology or syphilology. The board does not intend to limit or interfere with the professional activity of any duly licensed physician. Its aim is to improve the standards of practice of dermatology and syphilology by encouraging improvement in the opportunities for and quality of training for specialists in this field of medicine, and to certify, as specialists those who voluntarily comply with the requirements of the board.

Upon the board rests the responsibility of determining the standards of knowledge to be acquired, while upon the candidate will always rest the responsibility of acquiring the knowledge to fulfill these standards.

Certificates will be issued only to physicians in the United States and its possessions, in Canada and in Cuba.

REVOCATION OF CERTIFICATES

The certificates issued by the board are issued subject to the provisions of the certificate of incorporation and of the by-laws, and each certificate is subject to revocation in the event that: (a) the issuance of such certificate or its receipt by the physician so certified shall have been contrary to any of the provisions of the certificate of incorporation or by-laws; or (b) the physician so certified shall not have been eligible to receive such certificate, irrespective of whether or not the facts constituting him so ineligible were known to or could have been ascertained by the directors of the board at the time of the issuance of such certificate; or (c) the physician so certified shall have made any misstatement of fact in his application for such certificate or in any other statement or representation to the board or its representatives; or (d) the physician so certified shall have been convicted by a court of competent jurisdiction of a felony or of any misdemeanor involving, in the opinion of the board of directors, moral turpitude in connection with his practice of medicine; or (e) the physician so certified shall have had

his license to practice medicine revoked or shall have been disciplined or censured as a physician by any court or other body having proper jurisdiction and authority.

PUBLICATIONS OF THE BOARD

1. Booklet of Information.
 2. Opportunities for Graduate and Postgraduate Students in Dermatology and Syphilology, containing a list of places where instruction may be obtained, and details about these places. (In preparation.)
 3. The complete register of diplomates is published in the Directory of Medical Specialists, which can be obtained from the Columbia University Press, New York City. \$5.00.
 4. Syllabus of graduate training.
 - (a) To inform the student physician, intending to specialize, of the field to be covered in his preparation and the methods by which his preparation can be accomplished.
 - (b) To aid the medical schools and the dermatologic department of medical schools and hospitals by outlining the scope of teaching required for specification in dermatology and syphilology.
- Further information may be obtained from the secretary-treasurer.

INSTRUCTIONS TO APPLICANTS

Fill out application blank in detail.
Enclose fee of \$35. (Make checks payable to the American Board of Dermatology and Syphilology, Inc.)
Include photographs as directed on application blank.
Enclose reprint of each published paper, if possible.
Send completed applications and above items to the secretary.
Please indicate under No. 13 on the application blank as complete data as possible about your training in dermatology and syphilis. Indicate the month and year, if possible, or at least the number of months of the various parts of your training and also whether full time or part time. If part time indicate whether one-half day, six days a week or three days a week, etc. If dispensary service is considered as part of your training, please indicate details here as well as under No. 14.
In No. 16 indicate clearly when you limited your practice to dermatology and syphilis.
If your training and your practice overlap, please explain under No. 19.

ADDENDA

At a meeting of the board held in New Orleans early in 1941 it was decided:

1. If a candidate is called into active military or naval service he will receive full credit for dermatological training already finished at that time.
2. So far as counting as training in dermatology and syphilology any military or naval medical service, each case must of necessity be decided upon the evidence submitted in the case of each particular candidate.
3. The board accept not more than one year of military medical service as part of the required two years' experience in dermatology and syphilology to be eligible for examination.
4. A candidate who is called into military or naval service after completion of three years of training may take the complete examination of the board, and that if this examination is satisfactory a certificate will be issued after satisfactory completion of two years of further approved experience in dermatology and syphilology.
5. A candidate for a certificate may take the written examination at the next regular examination of the board after he has completed three full years of training.

AMERICAN BOARD OF INTERNAL MEDICINE, Inc.

ERNEST E. IRONS, Chairman, Chicago.
REGINALD FITZ, Vice Chairman, Boston.
WILLIAM S. MIDDLETON, Secretary-Treasurer, 1301 University Avenue, Madison, Wis.
DAVID P. BARR, St. Louis.
WILLIAM J. KERR, San Francisco.
WILLIAM S. McCANN, Rochester, N. Y.
JONATHAN F. MEAKINS, Montreal, Quebec.
JOHN H. MUSSER, New Orleans.
GEORGE GILL RICHARDS, Salt Lake City.

"... the membership of the board shall be maintained at the ratio of five members from the American College of Physicians and four members from the Section on the Practice of Medicine of the American Medical Association and that at least three of the members of the board from the American

College of Physicians and two members of the board from the Section on the Practice of Medicine of the American Medical Association shall be of professorial rank in approved medical schools of the United States or Canada."

"Sec. 5, Art. 5, Articles of Incorporation."

HISTORY AND AUTHORITY FOR ORGANIZATION

The American College of Physicians, through its Board of Regents at the annual session in Philadelphia on April 30, 1935, adopted a resolution for the establishment, with the Section on the Practice of Medicine of the American Medical Association, of an "American Board for the Certification of Internists." This board to consist of nine members; six to be appointed by the American College of Physicians, and three by the Section on the Practice of Medicine of the American Medical Association.

At the annual meeting of the American Medical Association at Atlantic City, N. J., June 10-14, 1935, the Section on the Practice of Medicine adopted the following resolution: "Resolved, that a committee of three, including a chairman, be appointed by the chairman of the Section on the Practice of Medicine, to discuss with a committee from the American College of Physicians, ways and means by which an examining board, comparable to such boards already existing in certain specialties, may be set up for the purpose of certification of specialists in internal medicine.

President James Alexander Miller of the American College of Physicians appointed the following as representatives of the College on the joint committee: David P. Barr, St. Louis; Jonathan C. Meakins, Montreal; William S. Middleton, Madison; John H. Musser, New Orleans; O. H. Perry Pepper, Philadelphia; G. Gill Richards, Salt Lake City. William J. Kerr, Chairman of the Section on the Practice of Medicine of the American Medical Association, appointed Walter L. Bierring, Des Moines; Reginald Fitz, Boston, and Ernest E. Irons, Chicago, as representatives of that section. Walter L. Bierring was named as chairman of the joint committee.

The joint committee of nine members held its first meeting in Philadelphia Dec. 14, 1935. At this meeting a resolution was adopted to submit an application in due form to the Advisory Board for Medical Specialties requesting authority to organize the American Board of Internal Medicine and for admission to membership in the said advisory board. In the preliminary draft of the constitution and by-laws, the ratio of the representation on the board was changed to five members from the American College of Physicians and four members from the Section on the Practice of Medicine of the American Medical Association.

On Feb. 16, 1936 a subcommittee consisting of Walter L. Bierring, Reginald Fitz, Ernest E. Irons, Jonathan C. Meakins and William S. Middleton held a meeting in the Palmer House, Chicago, to formulate and complete the details of the application to be presented to the executive committee of the Advisory Board for Medical Specialties, which body approved the organization of the American Board of Internal Medicine and directed that articles of incorporation be completed and filed.

In keeping with the ratio of membership to be maintained on the American Board of Internal Medicine, James Alexander Miller, President, officially designated David P. Barr, Jonathan C. Meakins, William S. Middleton, O. H. Perry Pepper and G. Gill Richards as representatives from the American College of Physicians, and William J. Kerr, Chairman, designated Walter L. Bierring, Reginald Fitz, Ernest E. Irons and John H. Musser to represent the Section on the Practice of Medicine of the American Medical Association.

The articles of incorporation were filed for record with the county recorder of Polk County at Des Moines, Polk County, Iowa, Feb. 28, 1936.

At the annual session of the American College of Physicians, Detroit, March 1-6, 1936, the Board of Regents officially approved the American Board of Internal Medicine. On May 10, 1936 the Advisory Board for Medical Specialties, meeting in Kansas City, gave its final approval to the American Board of Internal Medicine, granting at the same time admission to membership in the Advisory Board for Medical Specialties.

The Council on Medical Education and Hospitals of the American Medical Association approved the board at its meeting May 12, 1936. The Section on the Practice of Medicine of the American Medical Association gave its final approval May 13, 1936. The first meeting of the board was held at the Palmer House, Chicago, June 14-15, 1936.

Subspecialty certification was authorized by the Advisory Board for Medical Specialties and the Council on Medical Education and Hospitals of the American Medical Association, Feb. 16, 1941. The mechanism for instrumenting this program has been perfected through the cooperation of advisory committees in allergy, cardiovascular disease, gastroenterology and tuberculosis.

PURPOSE

1. To improve the standards of practice and the quality of service in the field of internal medicine.
2. To determine the eligibility of candidates who request admission to examination in accordance with regulations published herein.
3. To conduct examinations of eligible candidates who seek qualification by this board.
4. To issue certificates of qualification to all those meeting the requirements of the board.
5. To aid in improving the educational opportunities for the training of internists.
6. To administer the regulations which pertain to certification in the medical subspecialties referred to herein.

VALUE OF CERTIFICATION

1. Evidence of special training in the broader aspects of the field of internal medicine and recognition of qualifications for the practice of internal medicine as a specialty.
2. A requirement for admission to Fellowship in the American College of Physicians.

QUALIFICATIONS OF CANDIDATES

Each applicant for admission to the examination shall be required to present evidence that he has met the following standards:

1. GENERAL.

- A. Satisfactory moral and ethical standing in the profession.
- B. Membership in the American Medical Association or, by courtesy, membership in such Canadian or other medical society or societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association. Except as here provided, membership in other societies shall not be required.

2. PROFESSIONAL.

- A. Graduation from a medical school of the United States or Canada approved by the Council on Medical Education and Hospitals of the American Medical Association.
- B. Completion of an internship of not less than one year in a hospital approved by the same council.
- C. In the case of an applicant whose training has been received outside of the United States and Canada, his credentials must be satisfactory to the aforementioned council and the Advisory Board for Medical Specialties.

3. SPECIAL TRAINING.

A minimum of five years must elapse after completion of a year of internship in a hospital approved for intern training before the candidate is eligible for admission to an examination.

A. Three years of this period must be devoted to special training in internal medicine. This requirement should include a period of at least several months of graduate work under proper supervision in anatomy, physiology, biochemistry, pathology, bacteriology or pharmacology, particularly as related to the practice of internal medicine. This work may be carried on in any domestic or foreign medical school or laboratory recognized by the Council on Medical Education and Hospitals of the American Medical Association as offering appropriate facilities for this type of postgraduate training; or it may include a period of at least two years of graduate work under proper supervision in internal medicine or in its restricted and specialized branches in any domestic or foreign hospital, clinic or dispensary, or under the immediate preceptorship of an internist recognized by the board as offering appropriate facilities for this type of postgraduate experience.

B. A period of not less than two years of special practice in the field of internal medicine or in its more restricted and specialized branches.

MEMORANDUM FOR THE GUIDANCE OF CANDIDATES

The American Board of Internal Medicine does not propose to establish fixed rules for the preliminary training of candidates for certification in this field. Broad general principles for training, however, may be outlined, although such suggestions as are made must of necessity be subject to constant changes reflecting the dynamic nature of the specialty.

1. A sound knowledge of physiology, biochemistry, pharmacology, anatomy, bacteriology and pathology in so far as they apply to disease is essential for continued progress of the individual who practices internal medicine. Such knowledge may be obtained in a number of ways:

A. By properly arranged and supervised graduate courses;

B. By the opportunities for study afforded by the appointment to a junior position in a department of physiology, biochemistry, pathology, etc. (see above) with attendance upon advanced lectures in the other subjects;

C. By advanced study in these subjects while an intern or resident medical officer, and by the application of the principles involved to patients under one's control;

D. By the detailed study, under supervision, of a problem or topic in medicine in which the student brings the basic facts of physiology, pathology, etc., into direct relation with the concrete clinical problem. The analysis of a problem with detailed knowledge of its fundamental pathologic or physiologic background does much to stimulate thoroughness, clear thinking and progress.

2. A portion of the written examination is designed to test the candidate's knowledge in these "preclinical" subjects and especially in their application to disease rather than their purely laboratory aspects.

3. The mere factual knowledge of medicine and its basic sciences is not sufficient. The candidate must have had training in their use in furthering his understanding in clinical medicine. This implies practical experience under the guidance of older men who bring to their clinical problems ripe knowledge and critical judgment. Preparation to meet this requirement adequately may be even more difficult to obtain than the so-called scientific training. It may, however, be acquired in the following ways:

A. By work in a well organized hospital outdoor clinic conducted by competent physicians;

B. By a prolonged period of resident hospital appointments likewise directed by skilled physicians;

C. By a period of training in intimate association with a well trained and critical physician who takes the trouble to teach and guide his assistant rather than to expect him only to carry out the minor drudgery of a busy practice.

4. The board does not consider it to be the best interests of internal medicine in this country that rigid rules be formulated as to where or how the training outlined above is to be obtained. Medical teaching and knowledge are international. The opportunities of all prospective candidates are not the same. Some may have the opportunity of widening their knowledge by a period of study abroad. Others, at the other extreme, may be restricted to a comparatively narrow geographic area and their more detailed training must be obtained in short periods of good study scattered over a longer time. Although it is required that at least five years must elapse between the termination of the first intern year and the date when the candidate is eligible to take the examination, a longer period is advisable. The board wishes to emphasize that time and training are but a means to the end of acquiring a broadness and depth of knowledge of internal medicine which the candidate must demonstrate to the board in order to justify it in certifying that he is competent to practice internal medicine as a specialty. The responsibility of acquiring the knowledge as best he may rests with the candidate, while the responsibility of maintaining the standard of knowledge required for certification devolves on the board.

5. Applicants who graduated before the foundation of the American Board of Internal Medicine in 1936 will not be held to the strict interpretation of the published requirements in formal graduate training. Under such circumstances the board will accept the results of the examination as evidence of the qualifications for certification.

6. The board will recognize one year of basic science training which leads to a *higher degree* in the basic sciences, as one year of formal graduate training, whether taken previous to or subsequent to the first year of internship.

7. The board will recognize a second year of internship which is confined strictly to internal medicine as one year of the graduate training period.

8. The board will recognize one year of training in pediatrics, neurology or any medical subspecialty as one year of the graduate training period of three years as published herein.

9. In all instances the board will require a minimum of two years training in internal medicine.

10. In the current emergency the board will allow one year of military service in the United States Army, Navy, or Marine Corps to be applied toward the satisfaction of one year of graduate training, or one year of the practice of the specialty of internal medicine. This ruling admits of a substitution of military or naval service for only one year of the three years of graduate training, or one year of the two years of the practice of internal medicine as outlined in the published qualifications for admission to the examination of this board.

METHOD OF EXAMINATION

The examination required of candidates for certification as specialists in internal medicine will comprise Part I (written), and Part II (practical or clinical).

Part I. The written examination is to be held simultaneously in different sections of the United States and Canada on the third Monday of February and October of each year. This examination will be divided into a morning and an afternoon session of three hours each, and the two sessions A and B will include the following:

A. Question in applied physiology, anatomy, physiological chemistry, pathology, bacteriology and pharmacology as related to internal medicine as well as the cultural aspects of medicine.

B. Questions in general internal medicine.

The location of the written examination is determined by the number of candidates from any given area. In all instances, however, the board will make every effort to meet the convenience of all concerned with a minimum of expense and time.

All candidates must successfully pass the written examination before being admitted to the oral examination.

Part II. Candidates successful in the written tests will be eligible for the practical or clinical examination, which will be conducted by the members of the board near the time and place of the annual meeting of the American College of Physicians and of the American Medical Association and at such other times and places as the board may designate. This examination is conducted at the bedside, and each candidate will be assigned one or more patients in the hospital.

REEXAMINATIONS

1. Any candidate unsuccessful in the written examination may upon request repeat the examination after a period of two years. No additional fee is required for this examination. Any candidate unsuccessful in a second written examination may upon request repeat the examination after a further period of two years. A fee of \$10 is required for admission to a third written examination.

2. Any candidates unsuccessful in the oral examination may upon request repeat the examination after a period of one year. The period of one year is construed as the interval between annual meetings of the American College of Physicians or annual meetings of the American Medical Association. No additional fee is required for this examination. Candidates unsuccessful in the second oral examination may, upon request, repeat the examination after a period of two more years. A fee of \$10 is required for admission to the third oral examination.

APPLICATION

Candidates for examination shall make their application on a prescribed form which may be obtained from the office of the secretary-treasurer.

The application shall contain a record of the candidate's premedical and medical training as well as of internships, graduate study, hospital or dispensary staff appointments, teaching positions, membership in medical societies, medical papers published and the names of two well known internists to whom the board may refer for professional and character reference.

The application shall also be accompanied by one recent signed photograph mounted on the application, and the registration and examination fee of \$40, which fee will cover both the written and practical examinations. An additional fee of \$10 will be required when the certificate is issued.

CERTIFICATES

The certificate issued by the American Board of Internal Medicine shall be in such form as to comply with the articles of incorporation and the by-laws and shall be signed by the officers and members of the board, and shall bear the official seal of the board.

Certificates of the board will be issued to candidates who have satisfactorily completed the written and practical examinations, and been found qualified by the board to practice the specialty of internal medicine.

Subspecialty certification will be designated on the certificate.

CERTIFICATION IN MEDICAL SUBSPECIALTIES

In association with the advisory committees in allergy, cardiovascular disease, gastroenterology and tuberculosis, the American Board of Internal Medicine will:

1. Certify without examination candidates who have been certified by this board and who have been recommended by the advisory committee of the sub-specialty concerned for certification without examination.

2. Admit to further examination and certify if qualified, candidates who have been certified by this board and who have been recommended by the advisory committee of the sub-specialty concerned as eligible for admission to the examination.

3. Examinations for certification in the sub-specialties indicated will be conducted by guest examiners, nominated by the advisory committee concerned and selected by the American Board of Internal Medicine, at the time and place of the regular board examinations. A fee of \$10 is required to meet the expense of this examination.

4. Candidates who have not been certified by the American Board of Internal Medicine are ineligible for admission to examination in any sub-specialty.

The American Board of Internal Medicine and members of advisory committees in the sub-specialties referred to herein, recognize the value of a broad general training in internal medicine before attempting to qualify in a sub-specialty of medicine. It is, therefore, agreed that all candidates shall first be certified by the American Board of Internal Medicine as a prerequisite for certification in a sub-specialty.

REVOCATION OF CERTIFICATES

The American Board of Internal Medicine shall have the sole power, jurisdiction and right to determine and decide whether or not the evidence or information placed before it is sufficient to constitute grounds for revocation of any certificate issued by this board, and the decision of the board in the premises shall be final.

All official correspondence should be addressed to the secretary-treasurer.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY, Inc.

WALTER T. DANNREUTHER, President, New York.

JOSEPH L. BAER, Vice President, Chicago.

LOUIS E. PHANEUF, Vice President, Boston.

PAUL TITUS, Secretary-Treasurer, 1015 Highland Bldg., Pittsburgh.

E. A. SCHUMANN, Member of Executive Committee, Philadelphia.

ROBERT D. MUSSEY, Rochester, Minn.

L. A. EMGE, San Francisco.

NORMAN F. MILLER, Ann Arbor, Mich.

WILLARD R. COOKE, Galveston, Tex.

ORGANIZATION

In 1930 the American Association of Obstetricians, Gynecologists, and Abdominal Surgeons, the American Gynecological Society, and the Section on Obstetrics and Gynecology of the American Medical Association, each elected three Fellows to constitute the American Board of Obstetrics and Gynecology.

Dr. Walter T. Dannreuther of New York, Dr. Paul Titus of Pittsburgh and Dr. Grandison D. Royston of St. Louis were appointed to represent the American Association of Obstetricians, Gynecologists, and Abdominal Surgeons; Dr. Jennings C. Litzenberg of Minneapolis, Dr. Joseph L. Baer of Chicago, and Dr. E. A. Schumann of Philadelphia were appointed to represent the American Gynecological Society; Dr. Fred L. Adair of Chicago, Dr. R. D. Mussey of Rochester, Minn., and Dr. E. D. Plass of Iowa City were appointed to represent the Section on Obstetrics and Gynecology of the American Medical Association. Since formation of the board several of the original members have resigned and others have been duly appointed to fill their places.

The board was incorporated and organized and held its first meeting in September 1930. At that time the By-Laws were adopted and provision was made by resolutions for its proper functioning.

This board had been in the process of organization since 1927 and put into action a determined effort on the part of these three national organizations to improve the standards of practice of obstetrics and gynecology.

Experienced practitioners of the specialty have been required to undergo a practical clinical examination, whereas a younger group has had both a written and clinical examination and was

required also to submit reports of a group of cases in order to qualify for certification.

After the 1942 examinations, no such distinction will be made, and all applicants will be obliged to fulfill all of the requirements, including the written examination in obstetrics and gynecology and submission of case records, as well as the general oral-clinical and pathological examination in obstetrics and gynecology.

PURPOSES

First. To elevate the standards and advance the cause of obstetrics and gynecology.

Second. To determine the competence of practitioners professing to be specialists in obstetrics and gynecology.

Third. To arrange, control and conduct examinations to test the qualifications of voluntary candidates appearing before the board for certification as specialists in obstetrics and gynecology.

Fourth. To grant and issue certificates of qualification as specialists in the field of obstetrics and gynecology to candidates successful in demonstrating their proficiency.

Fifth. To serve the public, hospitals and the medical schools by preparing lists of specialists certified by the board.

These activities proceed from the certificate of incorporation in which it is stated that "the nature of the business and the objects or purposes proposed to be transacted, promoted and carried on by it" are as follows:

"To encourage the study, improve the practice, and advance the cause of obstetrics and gynecology, subjects which should be inseparably interwoven; and to grant and to issue to physicians duly licensed by law, certificates or other equivalent recognition of special knowledge in obstetrics and gynecology."

NO DEGREES OR LEGAL RESTRICTIONS

Each certificate granted or issued does not of itself confer or purport to confer upon any person any degree or legal qualifications, privileges or license to practice obstetrics or gynecology, nor does the board intend in any way to interfere with or limit the professional activities of any duly licensed physician. Its chief aim is to standardize qualification for specialists in obstetrics and gynecology, and to certify as specialists those who voluntarily appear before the board for such recognition and certification, according to its regulations and requirements.

VALUE OF CERTIFICATE

The national obstetrical and gynecological organizations, which have participated in the formation of the board and are sponsoring its activities, as well as other societies, attach considerable importance to its certificate. Both the medical and the lay public, including hospital directors, have come to utilize the certificate from this board freely as a means of determining who are well grounded as specialists in obstetrics and gynecology.

Lists of those holding certificates from this board who are limiting their practice to obstetrics and gynecology are published in the *Directory of Medical Specialists*; similar lists are published by the *American Journal of Obstetrics and Gynecology*, and also appear in the *American Medical Directory*. This latter indicates diplomates of this and other boards by means of numerical symbols appearing in the biographic records.

A joint directory of specialists certified by the fifteen major special boards was published in 1940 by the Advisory Board for Medical Specialties, and a new edition appears again in 1942. This board holds active membership in the Advisory Board for Medical Specialties.

This board, in cooperation with the Council on Medical Education and Hospitals of the American Medical Association, is conducting a survey of institutions providing acceptable residencies and internships in obstetrics and gynecology.

PREREQUISITES TO ELIGIBILITY

Each applicant before he shall become eligible to receive such certificate or other evidence of recognition:

1. Must have had conferred upon him a degree in medicine by an institution of learning approved by the Advisory Board for Medical Specialties and the Council on Medical Education and Hospitals of the American Medical Association.

2. Must establish in a manner satisfactory to the board of directors that he is a physician duly licensed to practice medicine.

a. That he is of high ethical and professional standing.

b. That he has received adequate training in obstetrics and gynecology as a specialty.

Each candidate should have certain fundamental knowledge of the basic essentials of anatomy, pathology, bacteriology, physiology, pharmacology, and therapeutics as related to the

practice of obstetrics and gynecology. Clinical training should consist, subsequent to graduation, of at least one year's general rotating internship, and thereafter a special residency in obstetrics and gynecology for a period of at least three (3) years, not necessarily consecutive. The board accepts the fifth or "intern" medical school year required at some schools in lieu of the usual fifth or intern "clinical training" year following graduation. As a substitute for special training, service with a qualified obstetrician-gynecologist preceptor, preferably one who has been certified by the board, may be acceptable. The exact time basis for this has not been specified, and each case must be reviewed and decided individually by the credentials committee after the application is submitted in the regular manner. The time allowance for this type of training will vary with the amount of work done with the preceptor. Opportunity for personal responsibility during this period of training is highly desirable. At least a fundamental knowledge of both obstetrics and gynecology is essential regardless of whether a candidate's practice is limited to one or the other branch. As heretofore, all candidates will be required to stand examination in both branches of the specialty, regardless of the fact that the major part of their practice may be in one or the other branch of the specialty.

An applicant entering military service in the present national emergency and assigned to work in general surgery under conditions satisfactory to the credentials committee may receive credit toward the required special training up to a maximum of six (6) months, applicable toward his three years of special training. Emergency military service may be counted as years of practice.

3. Must make application for investigation of his credentials and a survey of his character.

4. Must assure the board that he is limiting his practice to obstetrics and/or gynecology and that he intends to continue to do so having limited for at least six (6) months before making application.

This board deprecates engagement in other fields of practice than that in which candidates profess to be specialists. The board does not exclude from examination, however, obstetricians or gynecologists who practice abdominal surgery and urology in the female, as well as breast surgery, because of the correlation of these activities.

The board has ruled that physicians who accept male patients in their private or other practice, for operative or other care, cannot be regarded as specialists in obstetrics and gynecology. Special certifying boards in general surgery and internal medicine have been organized and such individuals should apply to these boards.

5. Must have membership in the American Medical Association, or membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association.

6. Must be a citizen of the United States or Canada.

This board will not certify a candidate who is not a citizen of the United States or Canada, though he be a resident of either country. Former citizens of other countries must have taken out at least first papers for citizenship and must have been certified by either the National Board of Medical Examiners or licensed to practice medicine in the United States or Canada by a state or provincial board of licensure; and further, there will be required a probationary period of at least three (3) years from the date of licensure in the practice of medicine in these countries before such a candidate may be admitted to examination.

APPLICATION AND FEES

Application must be made on a special blank which will be furnished by the secretary's office, 1015 Highland Building, Pittsburgh, Pa., and must be forwarded with the other required credentials and the application fee to the secretary's office. The secretary cannot make any eligibility rulings. These are made only by the credentials committee after reviewing the candidate's formal application, which must be completely filled out and previously filed with the secretary.

Application fee.....\$15.00

Make checks payable to American Board of Obstetrics and Gynecology.

(Applications will not be considered for classification and action by the credentials committee unless accompanied by the application fee, which is not returnable.)

Applications and application fees must be in the office of the secretary at least ninety (90) days prior to the scheduled date of the examinations.

Applicants who fail to exercise the examination privilege within three (3) years of the date of filing the application are required to file a new application and to pay a new application fee.

Examination fee.....\$85.00

(Payable when the candidate is notified of acceptance for examination. Not returnable after the candidate has been officially accepted by the credentials committee and notified to report for examination, except if the candidate is prevented from appearing for examination because of induction into military service.)

Applicants declared ineligible for admission to examination may reopen their applications within one (1) year of the filing date without payment of an additional application fee.

Total fee.....\$100.00

The fees have been carefully computed on a basis of cost of examinations and are used entirely for administrative expenses. Examiners serve without compensation other than actual expenses.

ABOLISHMENT OF SENIOR AND JUNIOR (A AND B) GROUP CLASSIFICATIONS

Effective March 1, 1942 the requirements for all candidates will be uniform, as follows:

1. Completion of at least one year in a general rotating intern service in a hospital approved by the Council on Medical Education and Hospitals of the American Medical Association.

(A second year general internship is to be considered as one of a candidate's years of practice. No credit will be given toward special training during a second year general internship.)

2. A minimum of seven (7) years of practice after the intern year, including at least three (3) years of special training in obstetrics and/or gynecology satisfactory to the board of directors.

3. Limitation of practice to obstetrics and/or gynecology. The candidate's practice must have been so limited for a period of at least six (6) months prior to the date of making application.

(Emergency military service or any other similar patriotic service, such as work with Selective Service boards, etc., will not be construed as nonlimitation of practice in violation of the board regulations.)

EXAMINATIONS

Applicants not qualifying before the 1942 examinations, as well as those who have previously applied and been accepted but have failed to appear for examination, and also those previously examined and failed will be subject to the new plan of general grouping and uniform examination after the final examination in June 1942.

Candidates accepted for examination after this year's class will be required to attain a passing grade in both a written examination and a review of case records (Part I), before becoming eligible for the oral clinical, and pathological examination (Part II).

Part I examinations are scheduled annually for the first Saturday of January. Application on an official application form, for admission to this examination must be filed in the office of the secretary with the application fee of fifteen dollars (\$15) at least ninety (90) days prior to this date. Grades cannot be mailed from the secretary's office until about March 15.

Arrangements will be made for candidates to report in any convenient city where there may be a diplomate of this board to conduct or supervise the written examination sent out under sealed cover from the board's office.

Applicants have three years from date of filing to appear for examination. After that time a new application with its fee is required.

Examination consists of:

1. A comprehensive written examination, given once yearly, including questions on both obstetrics and gynecology, as evidence of a fundamental knowledge of both branches is required of all candidates.

2. The filing of twenty-five (25) case reports in abstract form, to be presented by each candidate with the written examination paper to the local examiner, at the annual Part I examination. These must be of cases for which the candidate was personally responsible.

(The regulations regarding case records are newly revised ones, both in respect to reduction in number from fifty to twenty-five and to their preparation in abstract rather than in complete detail. For specific instructions regarding these new regulations see "Case Reports.")

No candidate is eligible for the general oral clinical, and pathological examinations (Part II) until he has passed the written portion and his case reports have been found satisfactory. The passing grade for the written examination and case reports is 75 per cent, and a candidate whose grade in either or both falls below 75 per cent is conditioned. Either or both of these conditions must be removed before the candidate is eligible for Part II.

Reexamination for the removal of conditions in Part I may be taken at any regular Part I examination after one year but within three years after the first failure without payment of an additional fee.

Candidates who successfully complete the Part I examination proceed automatically to the Part II examination held later in the year.

Part II. The general oral clinical, and pathological examinations given all candidates are conducted by the entire board and the assistant examiners near the time and place of the annual meeting of one or more of the national societies represented on this board, usually that of the American Medical Association.

Examination consists of:

1. Oral examination before from two to four examiners. An endeavor is made to adapt the details of the oral examination to each candidate's experience and practice, and the examination is particularly directed to ascertain his familiarity with recent obstetrical and gynecological literature, the breadth of his clinical experience, and his general qualifications as a specialist in obstetrics and gynecology.

2. Pathology examination. The candidate is expected to identify and discuss several obstetrical and gynecological pathological specimens and histologic sections.

As heretofore, all candidates will be required to stand examination in both branches of the specialty, regardless of the fact that the major part of their practice may be in one or the other branch of the specialty.

Examiners report orally upon each candidate to the assembled board, after which the results of their examinations are considered jointly by the entire board and assistant examiners. After a general consideration of the details of the candidate's oral and pathology examinations, including a review of his capability and general adaptability, the candidate is passed or failed by the entire board. No conditions are given in Part II of the examination. When a candidate fails in Part II of the examination, he is not required to repeat Part I, but to take a reexamination in the oral clinical, and pathological portions only. Reexamination may be taken within three (3) years of the original examination or first failure without payment of an additional fee.

CASE REPORTS

Particular attention is directed to this section, because of the new requirements regarding case records which go into effect in 1942.

Twenty-five (25) reports of operative obstetrical and gynecological cases are required. Nonoperative cases are not acceptable.

These reports must be of cases treated within four (4) years of the date of the candidate's application. The number of cases from one's residency service should not be more than half the total number.

The group of reports must include a variety of material rather than a number of cases of one type.

These reports should be prepared in abstract form in line with the following items:

1. Hospital admission number and date, with identifying initials, or name, of each patient, and name of operator (candidate), at the top of the page.

2. (a) Preoperative diagnosis, and basis for this, in brief.

- (b) Postoperative diagnosis, based on findings.

3. Nature of operation, omitting descriptive technical details, but including pathologist's findings on tissue removed.

4. Critical summary or analysis of cases, with critical deductions derived from correctness or incorrectness of diagnosis, operative findings, postoperative course, and from final results on discharges from hospital and at six months "follow-up" examination.

5. Two (2) separate index lists must accompany these reports, including name of hospital, admission manner, dates, identifying initials, or name of all twenty-five patients, with verifications of these and of the fact that the candidate was the operator, duly attested by the hospital superintendent or the medical director. The candidate's name must appear at the head of these lists.

Preparation of Reports. These are not to be copied verbatim from hospital records, but must be sufficiently complete so that the examiner can evaluate the judgment of the candidate in his choice of procedure.

Each report must include the items listed above, and again below:

1. Heading each separate case report must be the hospital number, name of the hospital at which the patient was operated upon, with all pertinent dates, together with the candidate's name.

2. Histories must be typewritten on standard size paper, 8½ by 11 inches.

3. Must be assembled by individual cases.

4. Must not be bound with any form of binding other than light weight paper folders or covers.

Obstetrical case reports should show:

1. Date of first prenatal visit and any special features bearing on the case.

2. The weight and condition of the child at birth and at time of discharge from the hospital.

Obstetrical reports which omit measurements of the pelvis inlet and outlet will be considered incomplete.

A final statement must be prepared for each case and must include:

1. An account of the candidate's personal observations of the case both prior to and subsequent to operation.

2. The basis for the diagnosis.

3. The facts that determined the course of treatment.

4. Critical conclusions to be drawn from the outcome of the case.

Case reports which do not include such discussion and comments will not be reviewed or graded by the examiners.

Two (2) complete index lists of these reports must accompany the records.

Separate lists must be made for each individual hospital at which operations were performed. These must state:

Candidate's name at head of each page.

Name and address of the hospital.

Patient's name.

Patient's admission number.

Date of admission.

Date of operation.

Date of discharge.

Lists must be verified by the superintendent or by the medical director, of each individual hospital from which the reports come. All verifications must be formally signed by the responsible hospital official.

Case reports submitted should be of patients treated within four (4) years of the date of the candidate's application.

The final action of the board is based upon the candidate's professional record, training and attainments, as well as on the results of his formal examination.

REVOCATION OF CERTIFICATES

Each Certificate of Qualification may be revoked by this board in the event that:

1. Any representation or statement made to the board or to any of its representatives by the physician so certified, including the statements contained in his application for certification, shall have been false or intentionally misleading.

2. The physician so certified shall not *in fact* have been eligible to receive certification, irrespective of whether or not the facts constituting such ineligibility were known to or could have been ascertained by this board, its members, directors, examiners, officers, or agents at or before the time of issuance of such Certificate of Qualification.

3. Any rule governing examination for certification shall have been violated by the physician so certified and the fact of such violation shall not have been ascertained until after the issuance of the Certificate of Qualification.

4. The physician so certified shall fail to abide by the regulations governing the limitation of his practice to the specialty as hereinabove defined.

5. The physician so certified shall violate the standards of ethical practice of medicine then accepted by organized medicine in the locality in which he shall be practicing and, without limitation of the foregoing, the forfeiture, revocation or suspension of his license to practice medicine, or the expulsion from, or suspension from the rights and privileges of membership in, the American Medical Association or any state or county society affiliated therewith, any recognized Canadian medical society, the American Association of Obstetricians and Gynecologists and Abdominal Surgeons or the American Gynecological Society shall be conclusive evidence of a violation of such standards of ethical practice of medicine.

6. The physician so certified shall fail to comply with or violate, or the issuance or receipt by him of such Certificate of Qualification shall have been contrary to or in violation of, the Certificate of Incorporation, the By-Laws or the Rules and Regulations of this board.

Upon revocation of any Certificate of Qualification by this board as aforesaid, the holder thereof shall return his Certificate of Qualification and all other evidence of certification to the secretary of the board and his name shall be removed from the list of diplomates or certificate holders by this board.

Make checks payable to the American Board of Obstetrics and Gynecology. Communications should be addressed to the secretary-treasurer.

SUPPLEMENT

GROUP CLASSIFICATION EFFECTIVE UNTIL MARCH 1, 1942

Classification of candidates in Groups A and B will continue in effect for and until the 1942 examinations under former existing regulations. Following that time new regulations finally adopted by the board at its 1941 meeting will be in force.

Group A consists of those who have limited their practice to obstetrics and/or gynecology for a period of ten years or more, having had adequate special training following a one year general internship.

Applications for this group will be accepted until March 1, 1942, or ninety (90) days prior to the annual general examination in June 1942.

Group B consists of those who have had:

1. At least one year of intern service in a hospital approved by the Council on Medical Education and Hospitals of the American Medical Association. A second year internship is to be considered as one of a candidate's years of practice. No credit will be given toward special training during a second year general internship.

2. Five years or more practice thereafter, including at least three years of special training in obstetrics and/or gynecology satisfactory to the Board of Directors.

3. Who have been limiting their practice to obstetrics and/or gynecology for at least six months prior to filing an application.

Opportunity for personal responsibility during this period of training is highly desirable.

Application for Group B will be accepted until Oct. 1, 1941, or until ninety (90) days prior to the scheduled date for the written examination and submission of case records, namely Jan. 3, 1942.

An applicant entering military service during the present national emergency and who is assigned to general surgery under conditions satisfactory to the Credentials Committee shall receive credit toward the required special training up to a maximum of six (6) months applicable toward his three years of special training.

EXAMINATION DETAILS

Applicants who qualify under Group A shall be required to undergo and pass a practical oral clinical and laboratory examination, including obstetrical and gynecological pathology. (After March 1, 1942 case records and written examinations will also be required as at present for Group B.) As heretofore, all candidates will be required to stand examination in both branches of the specialty, regardless of the fact that the major part of their practice may be in one or the other branch of the specialty.

Applicants who qualify under Group B shall be required to take and pass a written clinical and laboratory examination in obstetrics and gynecology, including, obstetrical and gynecological pathology, as well as the general oral clinical examination. Each candidate shall submit fifty (50) typewritten case records of major pathological obstetrical and/or gynecological cases with or without operative procedures. In both obstetrical and gynecological case histories not more than ten (10) major selected nonoperative cases may be included.

When pathological tissue is removed, adequate gross and microscopic descriptions are required. The candidate and the pathologist are required to employ the accepted nomenclature in the classification of gross and microscopic reports of pathological findings.

It is preferable that case records submitted be of patients treated within four (4) years of the date of the candidate's application. It is preferable also that the number of residency cases submitted should not be more than half (25) of the total number of fifty (50) cases required.

CASE RECORDS

Case histories need not be copied verbatim from the hospital records, but must be sufficiently complete so that the examiner can determine the diagnosis of existing conditions and evaluate the judgment of the candidate in his choice of procedure. Each history must give the hospital number and name of the hospital at which the patient was treated or operated upon, together with all pertinent dates. Histories must be typewritten on standard size paper, 8½ by 11 inches, assembled by individual cases, and submitted without any form of binding other than light weight paper folders. The following data should be as complete as possible: essential diagnosis, and in operative cases preoperative diagnosis; ample summary of operative procedure; clinical and pathological diagnosis; summary of postoperative course with special reference to morbidity; findings at time of discharge from hospital and at six months "follow-up."

The obstetrical case reports should show the date of the first prenatal visit and any special features bearing on the case. The examination of obstetric patients should include a routine serologic test for syphilis; also blood grouping or typing should be noted on histories of patients requiring transfusions. The weight and condition of the child at birth and at the time of discharge from the hospital should be shown on the obstetric history.

A final statement must be prepared for each case, to include an account of the candidate's personal observations of the case both prior to and subsequent to operation. These data must include:

1. The basis for the diagnosis.
2. The facts that determined the course of the treatment.
3. Critical conclusions to be drawn from the outcome of the case.

Case reports which do not include such discussion and comments will not be reviewed by the examiners. Obstetrical histories which omit measurements of the pelvic inlet and outlet will be considered incomplete.

The group of histories must include a variety of material rather than a number of cases of one type. The histories should be sufficiently detailed so that the examining board, after a careful reading of the reports, will be able to answer the following questions:

1. Is the diagnosis warranted by the recorded data?
2. If not, how lacking?
3. Are the indications for operation clearly stated?
4. Is the technique satisfactorily described?
5. Do the results justify the procedure?
6. Do the conclusions drawn indicate a grasp of the subject?

Only those reports which carry the candidate's personal deductions, conclusions and comments will be credited toward the fifty, and these reports must be diversified. Case reports which do not conform to board regulations will not be graded.

Note: Two (2) complete index lists of these cases must accompany the reports. Separate lists should be made for each individual hospital at which operations were performed. These lists must state the candidate's name at the head of each page, the name and address of the hospital, the name of the patient, admission number, date of admission, date of operation, and date of discharge. The candidate must have these lists verified by the superintendent, or the medical director of each individual hospital from which these case reports come. All verifications must be formally signed by the responsible hospital official.

Case histories are to be presented with the completed examination paper to the examiner conducting the written examination. They are not to be sent by the candidate to the secretary.

The final action of the board is based upon the candidate's professional record, training and attainments, as well as on the results of his formal examination.

Group B candidates cannot be notified of the results of their written examination and review of case reports until about March 15.

AMERICAN BOARD OF OPHTHALMOLOGY

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ORIGIN, AIMS AND METHODS

In 1913 the American Ophthalmological Society, the Section on Ophthalmology of the American Medical Association, and the American Academy of Ophthalmology and Otolaryngology appointed committees to report on ophthalmic education.

In 1914 these committees recommended that medical schools of the first class establish graduate courses in ophthalmology leading to an appropriate degree, and that these courses should represent not less than two years of systematic work subsequent to taking the degree of Doctor of Medicine. There was unanimous agreement as to the need of systematized and standardized training of those who are to practice ophthalmology, but it was clear that, in the near future, the number who would take the complete course leading to such a degree would be small. Moreover, such a course would not solve the problem of differentiating, in some degree, between the competent and the incompetent among those now in practice in ophthalmology. The committees were continued and, in 1915, they made further recommendations, as a result of which a joint board was created consisting of three representatives from each of the three special societies.

In 1916, after much preliminary work, this board was organized as the American Board for Ophthalmic Examinations (later changed to "American Board of Ophthalmology"). It was incorporated May 3, 1917.

In 1934 the plan of organization was changed so that each component society elects four members, instead of three, to form the board. The members of this board are chosen in the same manner as the presiding officers of these societies are chosen. One is elected each year by each of the societies represented on the board, to serve for four years.

As other specialties formed boards similar to the American Board of Ophthalmology the need for some supervising and coordinating control led to action by the American Medical Association in 1933 authorizing the Council on Medical Education and Hospitals: (1) to formulate standards of administration, based on those of the American Board of Ophthalmology, of Otolaryngology, of Gynecology and Obstetrics, and of Dermatology and Syphilology; and (2) to recognize officially new boards meeting these standards.

The Constitution of the Advisory Board for Medical Specialties which was organized in 1934 states that: "This board shall act in an advisory capacity to such organizations as may seek its advice concerning the coordination of the education and certification of medical specialists."

CHIEF FUNCTIONS

1. To establish standards of fitness to practice ophthalmology cooperating with hospitals and graduate schools of medicine.

2. To arrange and conduct examinations to test the qualifications of those who practice ophthalmology, and to confer certificates upon those who meet the standards established by the board.

3. To act as preceptors for prospective students of ophthalmology.

NO DEGREES

The conferring of a degree is left to the universities, where it belongs, and the board makes no attempt to control the practice of ophthalmology by any license or legal regulation whatever. It simply aims to establish a standard of fitness to practice ophthalmology, and to certificate any who, voluntarily, apply and satisfy the board of their qualifications.

The following is the wording of the present certificate:

The American Board of Ophthalmology hereby certifies that(name)..... has pursued an accepted course of graduate study and clinical work, and has successfully passed

the examination in ophthalmology conducted under the authority of this Board.

Date.....

Signatures of members of the Board

Many special eye hospitals as well as general hospitals in all parts of the country require the certificate for appointment or promotion on their staffs. In addition, many societies now require the certificate as a prerequisite for membership.

The number of institutions and societies which require the certificate of the board is increasing.

The American College of Surgeons recognizes the certificate of this board as evidence of academic fitness in ophthalmology. It requires from candidates for its Fellowship who hold such certificates only half as many case histories as from those who are not so certificated.

Up to July 1, 1941 approximately 1,875 ophthalmologists have received the certificate of the board.

FEES

The fee for the examination and the certificate of the American Board of Ophthalmology is \$50. Of this sum \$25, which is not returnable, must accompany the application. The balance of \$25 must be paid when the certificate is ready for issuance.

If a candidate fails in the written examination, he may be admitted to a second examination within three years, for which there will be an additional fee of \$10.

Applications expire three years from date of application. If a candidate has not appeared for examination before expiration of his application, he will be required to apply again and pay an additional application fee of \$25.

The fees of candidates are used solely for defraying the actual expenses of the board. The members of the board and their associates receive no emoluments.

GENERAL REQUIREMENTS FOR ALL CANDIDATES

1. Application on special blank, which may be obtained from the secretary, must be filled out accurately. Letters of endorsement from two well known physicians (preferably ophthalmologists) together with any other required credentials must accompany the application and must be sent to the secretary at least before December 1 preceding date when the candidate expects to appear for the written examination.

2. The candidate must have high ethical and professional standing in his community.

3. Membership in the American Medical Association or such other societies as are recognized for the purpose by the Council on Medical Education and Hospitals of the American Medical Association. In the case of an applicant whose training has been received outside of the United States and Canada, his credentials must be satisfactory to the board; if he has been in practice less than ten years he should obtain the certificate of the National Board of Medical Examiners.

4. A list of papers or books published by the candidate must be submitted.

5. Reports of ten cases of varied character which have been observed and treated by the applicant are required.

6. An examination divided into Part I (written) and Part II (clinical, practical and laboratory). In both of these examinations a knowledge of the practical application of the basic sciences of ophthalmology will be required.

7. Citizenship in country where candidate practices.

The final action of the board is based on the candidate's professional record, training and attainments as well as on the results of his formal examinations.

GENERAL EDUCATIONAL REQUIREMENTS

(Applicable as far as possible after 1944)

1. A degree from a medical school of high standing satisfactory to the board and approved by the Council on Medical Education and Hospitals of the American Medical Association. In the case of an applicant whose training has been received outside of the United States and Canada, his credentials must be satisfactory to the board. He may be required to obtain the certificate of the National Board of Medical Examiners.

2. Completion of an internship of not less than one year in a hospital approved by the same Council.

SPECIAL TRAINING

(Applicable as far as possible after 1944)

A period of combined study, training and practice of not less than three years in approved medical schools, hospitals, clinics, dispensaries, laboratories, preceptorships and private practice.

(A total of five years will be required of candidates practicing eye, ear, nose and throat.)

1. This shall include graduate study of the basic medical sciences which are fundamental to the intelligent practice of ophthalmology, particularly: anatomy, histology, embryology, optics, physiologic optics, visual physiology and psychology, pathology, bacteriology, pharmacology. Mere factual knowledge of these subjects is not sufficient. The candidate must have had training in their application and in their use in clinical ophthalmology, especially in refraction, disorders of motility and binocular vision, perimetry, and in the skilful adjustment and use of instruments such as the ophthalmoscope, retinoscope, slit lamp and microscope.

2. Active clinical experience in approved hospitals, clinics, dispensaries and private practice. Library and laboratory facilities should be utilized for the intensive study of cases.

The subject matter to be covered under 1 and 2 is outlined in the syllabus prepared by the board.

These requirements may be met in various ways:

BASIC STUDIES

A—By courses in approved graduate medical schools.

B—By the opportunities for study afforded by the appointment to a junior position in one of the departments with attendance at advanced lectures in the other subjects.

C—By advanced study of these subjects while a resident and by application of the principles involved to patients under one's control.

D—By the detailed study, under supervision or as assistant to an experienced research worker, of some problem or topic which brings the basic facts of physiology, pathology, etc., into direct relation with the concrete clinical problem. The analysis of a problem with detailed knowledge of its fundamental physiologic and pathologic background does much to stimulate thoroughness, clear thinking and progress.

CLINICAL EXPERIENCE

A—By residency in an approved hospital. The most desirable of these residencies have regular lectures covering the whole field of clinical ophthalmology and of the basic subjects as applied in clinical practice. Many of these have seminars at which residents report cases which they have carefully worked up. These are discussed by the other residents and by the staff and the method of presentation as well as the subject matter critically considered.

B—There are many residencies, usually of 12 months, which do not furnish regular instruction by lectures and quizzes and seminars. If he has access to a good library and laboratory, the student can learn a great deal and has some advantages over the man who expects to be "spoon-fed." The syllabus prepared by the board will guide him in his selection of topics to be studied.

C—There are some opportunities to continue the study and experience by securing appointments as fellows.

D—By a period of training in association with a well trained and critical ophthalmologist who takes the trouble to teach and guide his assistant.

E—After completing a residency it is of great advantage to secure a position in a clinic as fellow or assistant. This may require only part time work, but due credit will be given. Its value to the student depends on how much study he puts into it and on how competent his seniors are.

F—Research under competent critical and sympathetic supervision will give first hand insight into (1) the methods whereby old knowledge was and new knowledge is acquired, and (2) the pitfalls which accompany attempts to enlarge the sphere of knowledge. Only in this way can the candidate evaluate facts of the past and present in the intelligent critical way which is expected of the specialist.

The candidate who cannot secure the type of residency he desires should not despair, for his progress depends far more on how he uses his opportunities than on the opportunities themselves.

WHAT CONSTITUTES THE EXAMINATION

In determining the question of certification, the examiners rely on the following criteria:

1. The applicant's professional and ethical record;
2. Case reports;
3. Written examination;
4. Practical clinical and laboratory examination.

CASE REPORTS

Detailed instructions for the preparation of case reports should be obtained from the secretary.

WRITTEN EXAMINATION: PART I

The written examination may be given simultaneously in as many cities as the board may determine suitable for the purpose. A candidate, to be eligible for Part I, must meet all general requirements. Arrangements will be made for candidates to report in a convenient city where there may be a board member, or an associate member, to conduct and supervise the written examination.

These examinations will not be given at the time of the oral and clinical examination or board sessions but will be held at least sixty days before such examinations simultaneously in different parts of the country at places reasonably convenient to candidates.

No candidates shall be eligible for the practical examination until he has passed the written examination and his case reports have been found satisfactory. In the event of failure in either or both of these preliminary tests, a candidate is conditioned and the conditions must be removed before the candidate is eligible to appear for the practical (Part II) examination.

The written examination questions will be on all subjects as follows:

External Diseases.	Perimetry and Campimetry
Ophthalmoscopy	Relation of the Eye to General
Pathology-Histopathology	Diseases
Refraction and Retinoscopy	Therapeutics and Operations
Anatomy and Embryology	(including Practical Surgery)
Ocular Motility	Optics and Visual Physiology

Written examination papers will be reviewed by examiners who reside in districts remote from those in which the candidate practices.

PRACTICAL AND CLINICAL EXAMINATION: PART II

The purpose of the examination is to determine the competence of the candidate to practice ophthalmology.

Candidates must be prepared to be examined in the whole field covered by the syllabus of the board. The time spent in preparation will count less than the knowledge and experience acquired as shown on examination.

The subdivisions of the practical examination are as follows:

1. External diseases of the eye, lacrimal passages, etc., including inspection, focal illumination, use of loupe and slit lamp, examination of reactions of the pupil, of tension by tonometer and by fingers.

2. Ophthalmoscopy. Several patients will be examined by the candidate and the findings described or drawn. The ability to see with the ophthalmoscope and to interpret what is seen, and the systematic and thorough methods of examination used by the candidate will count for more than mere statement of diagnosis. A candidate should bring his own ophthalmoscope so that he may not suffer the handicap of an unfamiliar instrument.

3. Pathology. The candidate should be familiar with general clinical pathology as well as the etiology, pathology, and bacteriology of diseases of the eye. He will be asked to examine microscopic slides and to recognize ordinary normal and pathologic histology of the eye and to identify the commoner microorganisms.

4. Refraction. A candidate will examine patients and show mastery of various methods, and of the principles of refraction and of retinoscopy. He should bring his own retinoscope.

5. Ocular Motility. The candidate will demonstrate upon patients his familiarity with routine methods of examination for abnormalities of the ocular muscles.

6. Practical Surgery. A candidate will demonstrate his surgical technic upon animals' eyes. To have the advantage of using instruments with which he is familiar, he should bring his own equipment for performing a regular combined extraction of the lens.

DATES OF PART II EXAMINATION

Examinations will be held annually at or near the time and place of the meeting of the American Medical Association; also at other times and places at the discretion of the board, depending on the number of applications from any region.

Notices of all examinations will be found in The Journal of the American Medical Association, and in the special journals of ophthalmology.

REEXAMINATION

Candidates may be reexamined as often as they desire, provided they give satisfactory evidence of adequate preparation. One year must elapse between examinations and the board may, at its discretion, deny the candidate the privilege of reexamination.

REVOCATION OF CERTIFICATE

Any certificate issued by the board shall be subject to revocation by the board at any time in case it shall determine in its sole judgment that a candidate, who has received the certificate

of the American Board of Ophthalmology, either was not properly qualified to receive it, or has since its receipt become disqualified.

PREPARATORY GROUP

In establishing a preparatory group of prospective candidates for its certificate, the American Board of Ophthalmology plans to assist physicians who wish to study ophthalmology so that they will be acceptable as candidates for examination and certification when they have completed the requirements.

Any graduate or undergraduate of an approved medical school is eligible to make application for membership in this group. Candidates so applying will be notified officially by the secretary when the board has accepted their applications. If accepted, data will be sent concerning ethical and educational requirements. Syllabuses and other information will be made available to them. The board desires to help candidates improve their opportunities so that they will be fully prepared for the examination.

It is essential that candidates conduct themselves in an entirely ethical manner so that they will bring honor to the profession.

Information and counsel will be available at all times to accepted candidates in this group through advisers who are members or past members of the board.

Members of the preparatory group must keep a summarized record of their activities, two copies of which will be sent to the secretary in January of each year and will be incorporated in the final application for examination and certification.

The fee for application for membership in the preparatory group is \$10. This will be deducted from the \$50 which is required of every candidate for examination. When the candidate makes application for the examination, he will be required to pay \$25, and the balance of \$15 must be paid when the certificate is issued. No fees will be refunded.

It is of increasing importance that a physician specializing in diseases of the eye obtain the certificate of the American Board of Ophthalmology. The American Medical Association will especially designate certificated ophthalmologists in future directories. A special directory of all certificated specialists will be published by the Advisory Board for Medical Specialties.

Many national and local ophthalmologic societies demand the certificate of the American Board of Ophthalmology before admission. Promotion in many hospitals cannot be obtained unless the applicant holds the certificate of the board.

For sufficient reason, a person enrolled in this preparatory group may be dropped by vote of the board.

Communications should be addressed to the secretary-treasurer.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY, Inc.

FREMONT A. CHANDLER, President, Chicago.

JOHN C. WILSON, Vice President, Los Angeles.

GUY A. CALDWELL, Secretary-Treasurer, 3503 Prytania Street, New Orleans.

GEORGE E. BENNETT, Baltimore.

FRANK D. DICKSON, Kansas City, Mo.

MELVIN S. HENDERSON, Rochester, Minn.

SAMUEL KLEINBERG, New York.

J. SPENCER SPEED, Memphis, Tenn.

PHILIP D. WILSON, New York.

INTRODUCTION

The rapid growth of specialization and the increasing number of physicians limiting themselves in their practice to one branch of medicine or surgery emphasize the need for the proper certification of specialists in the various branches of the medical science. In recognition of this condition the American Board of Orthopaedic Surgery, Inc., aims to elevate the standard of qualifications for the practice of orthopaedic surgery and to certify those surgeons who voluntarily comply with its requirements.

In order to place orthopaedic surgery on the highest possible plane, the American Orthopaedic Association, the Section on Orthopaedic Surgery of the American Medical Association and the American Academy of Orthopaedic Surgeons united in organizing a certifying board which was incorporated in the year 1934 as the American Board of Orthopaedic Surgery, Inc.

The American Board of Orthopaedic Surgery, Inc., has been officially approved by the Advisory Board for Medical Specialties and by the Council on Medical Education and Hospitals of the American Medical Association.

WHAT THE BOARD WILL ACCOMPLISH

1. Certification by the board will establish a criterion to both interested lay and professional groups for judging the qualifica-

tions of an orthopaedic surgeon. Thus a reliable guide will be furnished for the choosing of consultants.

2. Hospitals and other organizations will no doubt establish rules limiting service on their permanent staffs to those certified by the board.

3. It will gradually tend to limit the practice of orthopaedic surgery to those properly qualified.

4. Certification by the American Board of Orthopaedic Surgery is one of the essential requirements for membership in the American Orthopaedic Association and the American Academy of Orthopaedic Surgeons.

Excerpts from Articles 1, 2, 7 and 8 of the By-Laws.

Article 1. *Section 1. DEFINITION.* Orthopaedic Surgery is that branch of surgery especially concerned with the preservation and restoration of the functions of the skeletal system, its articulations and associated structures.

Article 2. *Section 2. PURPOSES.* To test and determine the qualifications of applicants for registration and to issue certificates to those found qualified.

Section 3. To prepare and maintain a registry of the holders of the certificates issued by the board.

Section 4. To serve the public, physicians, hospitals and medical schools by furnishing lists of those who have received the certificate of the board, and thus to assist in protecting the public against irresponsible and unqualified practitioners who profess to specialize in orthopaedic surgery.

Article 7. *Section 1. APPLICATION FOR CERTIFICATE.* Each application for a certificate shall be filed with the secretary upon the prescribed form, and shall be accompanied by the fee which the board may fix from time to time. It shall also be accompanied by an unmounted autographed recent photograph of the applicant and the names of two orthopaedic surgeons acceptable to the board, who may be referred to for information in regard to the applicant.

Section 2. The applicant must have the following qualifications:

(a) He must be a graduate of a medical school approved by the Council on Medical Education and Hospitals of the American Medical Association.

(b) He must be of high ethical and professional standing.

(c) He must be a citizen of the United States or Canada.

(d) He must be duly authorized to practice medicine in the state or province of his residence.

(e) He must be a member of the American Medical Association or another society approved by the Council on Medical Education and Hospitals of the American Medical Association.

(f) He must have had one year of internship in a general hospital acceptable to the board.

(g) After Jan. 1, 1940, he must have had three years of concentrated instruction in orthopaedic surgery approved by and acceptable to the board. (A residency of at least two years on an orthopaedic service of a hospital recognized by the Council of the American Medical Association is desirable.)

(h) He must have knowledge of the basic medical sciences related to orthopaedic surgery.

(i) He must have had at least two years' further experience in the actual practice of orthopaedic surgery. Continuation of training (g) beyond the three years required will not be considered as actual practice unless the position of the candidate is considered permanent or his responsibilities equivalent to those encountered in private practice. This means that interns, residents, fellows, graduate students and assistants will not be credited with additional periods of training unless they are permanent members of the organizations with which they are associated.

(j) He must have limited his work to the field of orthopaedic surgery for at least two years prior to the submission of his application for examination.

(k) In the case of an applicant whose training has been received outside of the United States and Canada, his credentials must be satisfactory to the Council on Medical Education and Hospitals of the American Medical Association and to the National Board of Medical Examiners. In addition, he must have been engaged in the practice of orthopaedic surgery in the United States (or Canada) for at least three years prior to the submission of his application.

(l) During the present national emergency, the board will recognize up to a maximum of one year for work done in the orthopaedic division of the Army or Navy. If the above fills

out the three years of special required training for examination, further time spent in the orthopaedic division of the armed forces, up to a maximum of one year, will be credited towards the practice requirement.

Section 3. Each applicant shall be examined and his qualifications determined by the board in such manner as it may designate, and his record shall be reviewed by the board in the light of all assembled information.

Article 8. Section 1. CERTIFICATE. If the applicant be found qualified therefor, a certificate that he has been found by this board qualified to practice orthopaedic surgery shall be issued to him. The certificate shall be in such form as may be adopted by the board, and shall be signed by the officers and members of the board.

EXAMINATION

Examinations will be held once or twice a year. If feasible, these examinations will be in conjunction with meetings of the major orthopaedic societies.

Oral and written examinations will be held on clinical, anatomical and pathological phases of orthopaedic surgery. Anatomical and pathological laboratories and hospital wards will be used when practicable.

APPLICATION FOR CERTIFICATION

Application forms may be obtained from the secretary of the board. These should be filled in accurately and returned not less than ninety days prior to the next examination. An autographed photograph and the fee must accompany the application.

FEES

The examination fees have been adjusted so as to be in closer accord with the other specialty boards. A fee of \$50 will accompany the application and cover the expenses of the first examination. Candidates appearing before the board for second and third examinations will pay additional fees of \$25 for each of the subsequent examinations following the first. This will take effect as of Jan. 15, 1941 and will not be retroactive.

AMERICAN BOARD OF OTOLARYNGOLOGY

HARRIS P. MOSHER, President, Marblehead, Mass.
BURT R. SHURLY, Vice President, Detroit.
WILLIAM P. WHERRY, Secretary-Treasurer, 107 South
Seventeenth Street, Omaha.

EXECUTIVE COMMITTEE

HARRIS P. MOSHER, Marblehead, Mass.
BURT R. SHURLY, Detroit.
WILLIAM P. WHERRY, Omaha.
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RALPH A. FENTON, Portland, Ore.

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WILLIAM P. WHERRY, Omaha.

ORIGIN, AIMS AND METHODS

SOURCE OF AUTHORITY

In 1916 the American Academy of Ophthalmology and Otolaryngology appointed a committee on examinations, consisting of Drs. Thomas E. Carmody, Harris P. Mosher and Ross Hall Skillern, before whom new members professing otolaryngology as their sovereign work, were to appear to be qualified as such.

In 1924, through the persistent efforts of Dr. George Shambaugh, this activity was enlarged to include representatives from the American Otological Society; the American Laryngological Association; the American Laryngological, Rhinological and Otological Society; the American Academy of Ophthalmology and Otolaryngology; and the Section on Laryngology, Otology and Rhinology of the American Medical Association. Each organization appointed two members, making a total of ten, which constituted the first American Board of Otolaryngology.

Dr. T. H. Halsted of Syracuse, New York, and Dr. H. W. Loeb of St. Louis were appointed to represent the American Otological Society; Dr. H. P. Mosher of Boston and Dr. R. H. Skillern of Philadelphia were appointed to represent the American Laryngological Association; Dr. B. R. Shurly of Detroit and Dr. F. R. Spencer of Boulder, Colorado, to represent the American Laryngological, Rhinological and Otological Society; Dr. T. E. Carmody of Denver and Dr. W. P. Wherry of Omaha to represent the American Academy of Ophthalmology and Otolaryngology; and, Dr. J. C. Beck of Chicago and Dr. R. C. Lynch of New Orleans to represent the Section on Laryngology, Otology and Rhinology of the American Medical Association.

CHIEF ACTIVITIES OF THE BOARD

First. To establish standards of fitness to practice otolaryngology.

Second. To arrange, control and conduct examinations to test the qualifications of those who desire to practice otolaryngology and to confer a certificate on those who meet the established standards.

These activities proceed from the object of the corporation which is stated in the Articles of Incorporation to be:

"The object of the corporation shall be to elevate the standard of otolaryngology, to familiarize the public with its aims and ideals, to protect the public against irresponsible and unqualified practitioners, to receive applications for examination in otolaryngology, to conduct examinations of applicants, to issue certificates of qualification in otolaryngology and to perform such duties as will advance the cause of otolaryngology."

NO DEGREES

The conferring of a degree is left to the universities, where it belongs, and the board makes no attempt to control the practice of otolaryngology by efforts to promote any license or legal regulation whatever. It simply aims to establish a standard of fitness to practice otolaryngology, and to certify those who voluntarily apply and satisfy the board of their qualification.

VALUE OF CERTIFICATE

The five national otolaryngological associations responsible for the organization of the board are sponsoring its activities. Four of these associations require the board certificate from each applicant for membership.

Other important societies and organizations are following the example of these influential organizations. Moreover, the certificate of the board is required of candidates for appointments in many and various important positions in hospitals, colleges, etc. It is expected that the medical public and the lay public will learn to discriminate between those who are well fitted and those who are not, and will be influenced by the certificate of the board in arriving at their conclusions.

CLASSIFICATION OF CANDIDATES

Applicants for examination and for the certificate of the board are divided into classes according to the length of time they have practiced otolaryngology.

(Limited practice in otolaryngology interpreted as 90% otolaryngological practice—ophthalmology excepted.)

Class I—Limited Practice—15 years or more.

Class II—Limited Practice—10 to 15 years.

Class III—Limited Practice—5 to 10 years.

Class IVA—Limited Practice—5 years.

Class IVB—Limited Practice—3 and 4 years.

(Only candidates having completed a satisfactory residency or an acceptable full academic year basic science course are eligible to IVB.)

REQUIREMENTS

UNTIL JAN. 1, 1942

The following general requirements are demanded by the board:

First. A candidate acceptable for the examination must be a graduate from a school approved by the Council on Medical

Education and Hospitals of the American Medical Association; furthermore, he must have at least one year of internship in an approved hospital.

Second. Membership in the American Medical Association or, by courtesy, membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association. Except as here provided, membership in other societies should not be required.

Third. In addition, a candidate must have completed at least three years graduate preparation for the specialty, at least one year (more desirably two) in a recognized residency or in basic courses and followed by private practice in otolaryngology.

Fourth. Five years of specialized practice will be accepted in lieu of the requirements of paragraph 3 until Jan. 1, 1942.

Fifth. Application must be made on a special blank procured from the secretary. It must be executed and returned to the secretary, together with other required credentials, sixty days in advance of the examination at which the candidate desires to appear.

Sixth. All applicants must send a small photograph with application and must present themselves in person before the board.

Seventh. Fee for the examination is \$50 and same must accompany application blank. No application will receive consideration until fee is paid.

Eighth. An application remains valid only five years—therefore, an applicant must appear for examination within this time or forfeit fee. The fee under no circumstances is returnable.

If the candidate fails in an examination he will be admitted to a second examination after one year, but within the regulation time limit of his application. Sixty days' notice of intention to appear is required. If a candidate who has failed does not appear before the expiration of validity of his application he will be required to make new application and pay additional fee of \$50 before reexamination.

An applicant having failed twice, must file a new application, pay an additional fee of \$50 and convince the board of additional postgraduate study previous to being assigned appointment for another examination.

Examinations covering two or three days will be held bi-annually at, or near, the time and place of meeting of the American Medical Association, and of the American Academy of Ophthalmology and Otolaryngology.

An extra examination is sometimes held provided the class of applicants is large enough to warrant it.

Candidates are required to sign the following pledge:

I hereby apply to the American Board of Otolaryngology for examination by the said board in accordance with its rules and herewith enclose the fee of fifty (\$50) dollars. I hereby agree that prior to an examination, or subsequent to my examination, the board may investigate my standing and reputation as a physician, including my reputation for complying with the standard of ethics of the profession, and may refuse to examine me, or, having examined me, may refuse a certificate, and such refusal to grant a certificate, whether justified or otherwise, may not and shall not be questioned by me in any court of law or equity or other tribunal, nor shall I have any claim, in the event of such refusal, to a return of the fee accompanying this application.

PRACTICAL EXAMINATION

1—Written examinations:

Class III, Class IVA and Class IVB.

2—Pathology:

Microscopy—Class IVA, Class IVB.

Gross—Class III, Class IVA and IVB.

3—Clinical examination of patients: To include history taking; physical and functional examinations; use of laboratory and x-ray findings; discussion of differential diagnosis; and discussion and defense of his findings, opinion and suggested management.

All classes.

4—Didactic examination to be a private, oral examination covering any aspect of otolaryngology and its interrelation with general medicine.

All classes.

Communications should be addressed to the secretary-treasurer.

AMERICAN BOARD OF PATHOLOGY, Inc.

A. H. SANFORD, President, Rochester, Minn.

FREDERICK H. LAMB, Vice President, Davenport, Ia.

FRANK W. HARTMAN, Secretary-Treasurer, Henry Ford Hospital, Detroit.

ALVIN G. FOORD, Pasadena, Calif.

NATHAN CHANDLER FOOT, New York.

HOWARD T. KARSNER, Cleveland.

ROY R. KRACKE, Emory University, Ga.

JOSIAH J. MOORE, Chicago.

ORGANIZATION AND OBJECTIVES

In June 1935 the Section on Pathology and Physiology of the American Medical Association and the American Society of Clinical Pathologists appointed committees which acted jointly in consideration of the feasibility and necessity of a national qualifying board. The joint committees agreed unanimously that such a board should be established and proceeded to draw up by-laws for such a board. In May 1936 the American Society of Clinical Pathologists and the Section on Pathology and Physiology of the American Medical Association accepted the proposed by-laws, authorized the nomination of four members each to the board and suggested incorporation in the state of Michigan. Approval of the board by the Advisory Board for Medical Specialties and the Council on Medical Education and Hospitals of the American Medical Association was given. On July 19, 1936, the organization of the board was carried out in Chicago.

PURPOSES

A. To encourage the study and promote the practice of pathology.

B. To elevate the standards and advance the cause of pathology, by encouraging its study and improving its practice.

C. To determine the competence of those wishing to practice this specialty of pathology and to arrange, conduct, and control investigations and examinations to determine the qualifications of such individuals who voluntarily apply for the certificates issued by the corporation.

D. To grant and issue certificates in the special field of pathology to voluntary applicants therefor and to maintain a registry of holders of such certificates.

E. To serve the public, the medical profession, hospitals, and medical schools by preparing and furnishing lists of specialists who have been certified by the corporation.

VALUE OF THE CERTIFICATE

Judging from the experience of other specialties operating a certifying board it is anticipated that the certificate will be of value in that the medical profession, the lay public, and hospital administrators will utilize certificates from the board as a means of discriminating between those that are thoroughly qualified in pathology and those that are not. Lists of those holding certificates will be made available from time to time by this board through the publication of the same in pamphlets and in national medical journals.

BOARD NOT AN EDUCATIONAL INSTITUTION

The board is in no sense an educational institution and the certificates of the board are not to be considered degrees. Therefore the certificate does not confer on any person legal qualifications, privileges, or license to practice medicine or the specialty of pathology. The board does not purport in any way to interfere with or limit the professional activities of any licensed physician. Its chief aim, as stated above, is to standardize the qualifications for the specialty of pathology and to issue certificates to those voluntarily complying with the requirements of the board.

GENERAL REQUIREMENTS

A. General qualifications.

1. Satisfactory moral and ethical standing in the profession.

2. License to practice medicine.

3. Membership or associate membership in the American Medical Association or by courtesy membership in such Canadian or other national medical societies as are approved by the Council on Medical Education and Hospitals of the American Medical Association is suggested.

4. That the applicant devotes his time primarily and principally to the practice of pathology.

B. Professional education.*

* NOTE: In case of an applicant whose education and/or training has been received outside the United States or Canada, his credentials must be acceptable to the National Board of Medical Examiners and the American Board of Pathology.

1. Graduation from a medical school in the United States or Canada, approved by the Council on Medical Education and Hospitals of the American Medical Association.

C. Special training, to be effective after July 1, 1938:

1. Completion of an internship of not less than one year in a hospital approved by the Council on Medical Education and Hospitals of the American Medical Association.

2. A period of study, exclusive of internship, of not less than three calendar years, exclusive of reasonable vacation periods, in an institution or department of pathology recognized by the same council and the board of trustees as competent to provide a satisfactory training in the field of pathology. This period of special training preparation shall include the following:

(a) Graduate training for one year in the various phases of clinical pathology.

(b) Training and experience of not less than two years in a department of pathologic anatomy.

(c) Such training may be combined or in sequence.

3. A fifth year of training or practice in pathology.

D. Special qualifications:

1. The board may accept candidates without special training as outlined in Section C above provided that:

(a) The candidate shall have been for a period of five years of professional rank in a department of pathology in an approved medical school, or

(b) The candidate shall have been practicing pathology for ten years in a senior position in a hospital, having an adequate department of pathology, and approved by the Council on Medical Education and Hospitals of the American Medical Association.

Candidates with special qualifications, as outlined in Section D above, may be certified without examination, at the discretion of the board.

APPLICATION BLANK AND FEE

Application must be made on the special form which may be procured from the secretary and forwarded with other required credentials and the application fee. Applications cannot be given consideration by the board unless accompanied by the application fee.

The application or examination fee for candidates is \$35. If certified without examination \$10 of fee will be refunded. If the candidate fails in his examination he will be admitted to a second examination after one year, but not later than three years, without additional fee. After two reexaminations the applicant must file a new application and pay an additional fee before a fourth examination will be given.

The examination fee of \$35 has been arrived at after careful consideration, and is based on actual estimates of the expense of examination and administration. None of the board members receive any compensation for their services except actual expenses incurred.

If the applicant, for any reason, is deemed ineligible for examination by the board his fee will be returned; however, the application fee is not returnable after the candidate has officially been accepted for examination and notified to report for the same.

EXAMINATIONS

Written and oral examinations will be held at or near the time and place of national medical meetings at the discretion of the board. If a number of applications from any region of the country are received an examination in conjunction with a national medical meeting in that section will be arranged so that the financial outlay of the applicant in meeting the examinations will be as small as possible.

The examinations are to be based on the broad principles of pathology with emphasis on diagnosis and interpretation. The applicant may apply for certification in either pathologic anatomy or clinical pathology, or both.

DEFINITIONS

1. Pathologic anatomy is that branch of pathology which deals with the morphological aspects of disease, recognition being given that this definition covers two phases of pathology.

(a) The applied phase, with special attention to biopsy description and diagnosis.

(b) The academic phase of teaching and general morphological diagnosis.

2. Clinical pathology is that branch of pathology which deals with bacteriology, immunology, biochemistry, parasitology, hematology, and clinical microscopy, in relation to the diagnosis, prognosis, and treatment of clinical disease.

REEXAMINATIONS

In case the candidate fails in the qualifying examination he will be eligible for reexamination after one year has elapsed, but he must give written notice of his intention to appear for reexamination. Two reexaminations are allowed without an additional fee, providing they are taken within a three year period. The candidate who fails three times must file a new application and pay a second \$35 fee before he is eligible for further examination.

REVOCATION OF CERTIFICATES

Certificates issued by the American Board of Pathology are subject to the provisions of the Articles of Incorporation No. XI, Section 4. Any certificate issued by the Board of Trustees shall be issued subject to revocation in the event that:

(a) The physician or party so certified shall have made any misstatement or misrepresentation of a material fact in his application, or in any other communication to the board or its representatives, which misstatement or misrepresentation affected the eligibility of the physician or the party so certified.

(b) The issuance of such certificate has been made contrary to or in violation of any of the rules, laws, or regulations of this corporation.

(c) It is ascertained that the physician or party so certified is not eligible in fact to receive such certificate.

(d) The physician or party receiving such certificate shall prior to the issuance of such certificate or thereafter have been convicted by a court of competent jurisdiction of a felony or of any misdemeanor, which misdemeanor in the opinion of the Board of Trustees, shall involve moral turpitude.

(e) The physician or party receiving such certificate shall prior thereto, or thereafter, have his license to practice medicine revoked.

(f) The physician or party receiving such certificate shall be expelled from any of the societies or organizations making him eligible to this corporation as an applicant for such certificate.

All communications should be addressed to the secretary-treasurer.

AMERICAN BOARD OF PEDIATRICS, Inc.

BORDEN S. VEEDER, President, St. Louis.

C. ANDERSON ALDRICH, Secretary-Treasurer, 707 West Fullerton Avenue, Chicago.

HORTON CASPARIS, Nashville, Tenn.

FRANKLIN PAUL GENGEBACH, Denver.

CHARLES F. MCKHANN JR., Ann Arbor, Mich.

EDWARD BYER SHAW, San Francisco.

HAROLD COE STUART, Boston.

PHILIP VAN INGEN, New York.

ALFRED AUGUSTUS WALKER, Birmingham, Ala.

ORIGIN

The American Board of Pediatrics was established in June 1933 by joint action of the American Pediatric Society, the American Academy of Pediatrics and the Section on Pediatrics of the American Medical Association after consideration of the report of a committee on pediatrics as a special field of medical practice. The committee recommended that the certification plan adopted and in use in the fields of ophthalmology, otolaryngology, gynecology and obstetrics, and dermatology be adapted to pediatrics. Similar boards have been subsequently formed in all the other special fields.

In order to correlate the activities of the various qualifying boards there has been formed the Advisory Board on Medical Specialties, composed of representatives of all the qualifying boards, including the American Board of Pediatrics, as well as representatives of the Association of American Medical Colleges, the National Board of Medical Examiners, the Federation of State Medical Boards of the U. S. A. and the American Hospital Association.

Any method of certification in any specialty must be national in scope, must in its ultimate analysis be controlled by the men in each special field and must be independent of society membership or affiliation. The American Board of Pediatrics fulfills these three essentials: A uniform standard of competency is set up, the character of which is assured through the affiliation with the Advisory Board on Medical Specialties; the board is controlled by pediatricians, its membership being composed of three men appointed by each of the three national pediatric societies; the board is not a medical society, however, and certification is independent of society affiliation.

The American Board of Pediatrics was incorporated in the state of Delaware in November 1933 as a nonprofit organization.

FUNCTION

The functions of the board are outlined in the articles of incorporation as follows:

"To encourage the study, improve the practice and elevate the standards of pediatrics; and to grant and issue to physicians, duly licensed by law, certificates or other equivalent recognition of special knowledge in pediatrics."

The board has interpreted this to mean that its efforts to encourage and improve the practice of pediatrics shall be limited to its function of certification of competency in the specialty. Obviously other organizations are better able to further the general improvements in pediatrics.

The board specifically defines its activities as follows:

1. To establish standards by which the competency of men to practice pediatrics may be estimated.
2. To arrange, control and conduct examinations to test the qualifications of those desiring certification as pediatricians.
3. To grant certificates of qualification to those applicants who meet the standards successfully.

The board further feels that in carrying out these activities it is merely acting as the agent of the three societies which appointed its members and initiated the project.

No financial recompense of any kind is made to any member of this board except to cover actual traveling expenses to meetings and examinations. The \$30 application fee is fixed below that of any of the similar examining boards of other specialties. In the light of experience of the existing boards it may later be necessary to raise this fee to carry on the work of the board successfully.

CERTIFICATE—NOT A DEGREE

Certificates granted are in no sense degrees, nor do they purport to confer upon any person any legal qualification, privilege or license to practice pediatrics. Neither does the board intend in any way to limit the activities of any licensed physicians. It is merely attempting to standardize qualifications and to issue certificates to those who voluntarily comply with the requirements.

VALUE OF THE CERTIFICATE

It is anticipated that the certificate will become of value in that both the medical and lay public, including hospital directors, will soon utilize the certificate from this board as a means of discriminating between those who are well grounded as pediatricians and those who are not.

A certificate is required as one of the qualifications for new members of the American Academy of Pediatrics. The certificate of the American Board of Pediatrics is recognized by the Council on Medical Education of the American Medical Association. Holders of certificates are so designated in the directory of the American Medical Association.

A joint Directory of Specialists certified by the fifteen specialty boards was published in 1940 by the Advisory Board for Medical Specialties.

Lists of those holding certificates from this board are published in this Directory of Medical Specialists and additional lists of new licentiates are published in the Journal of Pediatrics and the American Journal of Diseases of Children. The American Medical Directory indicates diplomates of this and other boards by means of abbreviations and symbols (A.B.I.) appearing in the biographic records.

This board, in cooperation with the Council on Medical Education and Hospitals of the American Medical Association, is conducting a survey of institutions providing acceptable residencies and internships in pediatrics.

APPLICANTS FOR CERTIFICATES

Requirements for Applicants.—Each applicant for a certificate must establish in a manner satisfactory to the board that he is of high ethical and professional standing, is a graduate of a medical school which is satisfactory to the board, and has received adequate training in pediatrics as a specialty in addition to passing the examination given by this board.

Applicants must be citizens of the United States, of its dependencies, or of Canada.

Applicants will be divided into two classes, according to the length of time they have been engaged in the specialty.

Following is the classification of applicants for certification. The changes are based upon the experience gained from examination and upon the general requirements as adopted by the Advisory Board of Medical Specialties and the Council on Medical Education and Hospitals of the American Medical Association.

All applicants must take the examinations.

Group I.—Physicians who have specialized in pediatrics for ten years or more. After July 1, 1943, Group I will be abolished.

The minimum requirements for *Group II* are as follows: Graduate of a Class A medical school.

One year's intern service in a recognized hospital.

Two years' service in a pediatric center.*

An additional term of two years of specialized study and/or practice.

The board defines service in a pediatric center as full time devoted to rounded experience in an acceptable hospital or a graduate course, which includes ward and outpatient service and both therapeutic and preventive pediatrics. The time served in pediatric centers need not be continuous or spent in the same institution. In the case of a post-graduate course an academic year will meet the requirement of one year's work.

The application fee is \$30 and must be remitted with the application. Refund will be made only if the applicant is refused examination. The applicant who has failed in an examination will not be required to pay a second fee if he takes another examination after the lapse of two years.

Application must be made on special blanks which may be secured from the secretary. These must be sent to the secretary at least four months before the date at which the candidate expects to take the examinations.

Letters from two competent pediatricians recommending each applicant must be sent to the secretary of the board. These letters are not to accompany the application, but should be sent directly to the secretary. No member of the board may recommend any applicant.

INFORMATION CONCERNING EXAMINATIONS

Examinations will be held at or near the time and place of meetings of the American Medical Association and of the American Academy of Pediatrics, or at other times and places at the discretion of the board, depending on the number of applicants from any region of the country. It is proposed to arrange examinations in different cities so that as little financial burden as possible will be placed upon the applicants in meeting the examiners.

The purpose of these examinations is to determine the applicant's competency to practice pediatrics. This board feels that the best impression of an applicant's ability can be obtained by oral examination although written ones may be substituted at times. However, at the present time this board is also giving a written examination at least six weeks preceding the oral examination. This written examination is given locally under a monitor. It is not proposed at the present time to require the applicant to send in case reports. The board feels that growth and development are fundamental parts of pediatric training.†

A list of papers or books published must be sent with the application blank.

It should be emphasized that competency in the practice rather than in the theory of pediatrics is required.

Communications should be addressed to the secretary.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY, Inc.

C. MACFIE CAMPBELL, President, Cambridge, Mass.
WALTER FREEMAN, Secretary-Treasurer, 1028 Connecticut Avenue N.W., Washington, D. C.
LOUIS CASAMAJOR, New York.
FRANKLIN G. EBAUGH, Denver.
TITUS H. HARRIS, Galveston, Tex.
JOHN C. MCKINLEY, Minneapolis.
JOHN M. MURRAY, Boston.
J. M. NIELSEN, Los Angeles.
TRACY J. PUTNAM, New York.
HANS H. REESE, Madison, Wis.
EDWARD A. STRECKER, Philadelphia.
LLOYD H. ZIEGLER, Wauwatosa, Wis.

HISTORY AND STATEMENT OF PRINCIPLES

The American Board of Psychiatry and Neurology was founded in 1934 following conferences of committees appointed by the American Psychiatric Association, the American Neurological Association, and the Section on Nervous and Mental Diseases of the American Medical Association. This action was taken in response to a widespread desire among specialists in psychiatry and neurology for some means of distinguishing the fully qualified specialist from the would-be specialist of inferior training and inadequate experience. That this desire is by no means limited to those who practice psychiatry and neurology is indicated by the formation of corresponding boards

* A maximum of six months of this time may be spent in full time continuous work in a recognized hospital.

† The three volumes on Growth and Development of the White House Conference contain this material, Century Company, publishers.

covering internal medicine, surgery, and the major specialties. The success of this method of distinguishing the specialists is indicated by the increasing number of candidates taking the examinations, and by the listing accorded in the American Medical Directory to those specialists holding the certificates of the various boards.

CONSTITUTION AND ACTIVITIES

The American Board of Psychiatry and Neurology is composed of twelve members, four each from the American Neurological Association and from the American Psychiatric Association and two neurologists and two psychiatrists elected by the Section on Nervous and Mental Diseases of the American Medical Association. Annual elections to fill the places of members whose terms have expired take place in each of the nominating associations with the understanding that neurology and psychiatry are always equally represented on the board. The board holds annual meetings in December of each year for the transaction of whatever business may come before it and also holds special meetings for the purpose of examining candidates and of passing upon the qualifications of those seeking the certificate without examination.

FUNCTIONS

(a) To determine the competence of specialists in psychiatry and neurology.

(b) To arrange, control and conduct investigations and examinations to test the qualifications of voluntary candidates for certificates issued by the board.

(c) To grant and issue certificates or other recognition of special knowledge in the field of psychiatry and neurology to successful voluntary applicants therefor.

(d) To serve the public, physicians, hospitals and medical schools by preparing lists of practitioners who shall have been certified by the board.

(e) To consider and advise as to any course of study and technical training, and to diffuse any information calculated to promote and ensure the fitness of persons desirous of qualifying for a certificate of qualification to be issued thereby.

INFORMATION FOR APPLICANTS

EXCERPTS FROM ARTICLE VII OF THE BY-LAWS

SECTION 1. *Application for Certificates.* Application for certificates shall be considered by the secretary only when made formally on the official application blank in such form as may be adopted from time to time by the board of directors and when accompanied by an application fee in such amount as may be fixed from time to time by the board of directors.

SECTION 2. *Form of Certificates.* There shall be separate certification in psychiatry and in neurology and two certifications or a combined certification for those qualified in both fields. The certificates shall be in such form as is approved by the board of directors.

SECTION 3. *Requirements for Applicants.* Each applicant for a certificate must establish that—

(a) He is a physician duly licensed by law to practice medicine.

(b) He is of satisfactory ethical and professional standing.

(c) He is now a member of the American Medical Association, or a member of such medical societies as are recognized for purposes of certification by the Council on Medical Education and Hospitals of the American Medical Association. Exceptions to the foregoing may be made at the discretion of the board for good and sufficient reasons.

(d) He has received adequate training in psychiatry or neurology, or both, as a specialty.

SECTION 4. No candidate is eligible for examination by the board until he has completed at least five years of special training and experience in neurology or psychiatry for a single certificate, or at least six years of training and experience for certification in both neurology and psychiatry.

CLASSES OF APPLICANTS AND FEES

Applicants may request certification in psychiatry, or in neurology, or in both psychiatry and neurology.

Limitation of practice to the specialty of psychiatry and/or neurology need not be complete provided a candidate both by his previous training, experience and standing, and by examination, can prove his competency to practice that specialty.

However, in case a physician has already been certified by one of the other boards as a specialist in another field, he will not be considered for certification in psychiatry and/or neurology except under special circumstances.

Class I

Physicians who graduated from medical school in 1919 or before and who have carried on specialized practice in neurology and/or psychiatry for at least fifteen years are to be

considered on their professional record and passed, if satisfactory to the Board, or further evidence of qualification or examination may be required.

A candidate in Class I who has received certification in either psychiatry or neurology may apply within three years for certification in the other field without additional fee. After three years such application shall be considered as a new application with corresponding fees.

When certification in Class I has been refused, the candidate may file application for reconsideration within three years without additional fee. After three years such application for reconsideration shall be considered as a new application with corresponding fees.

Class II

Physicians who graduated from medical school up to and including 1929 and who have practiced the specialty of psychiatry and/or neurology for at least five years will be required to pass an examination in psychiatry or neurology, or both.

Class III

Physicians who graduated after 1929, up to and including 1934, will be required to pass an examination to satisfy the board that they have adequate knowledge of all subjects specified in the by-laws for candidates graduating after 1934. Their previous training and experience must be acceptable to the board.

Class IV

Candidates graduating from medical school after 1934 shall fulfil the preceding general requirements as given in Section 3 of Article VII and the following special requirements:

PROFESSIONAL EDUCATION

(1) Graduation from a medical school approved by the Council on Medical Education and Hospitals of the American Medical Association.

(2) Completion of a general internship of not less than one year in a hospital approved by the same Council.

SPECIAL TRAINING

(These requirements are to be placed in force as soon as practicable after Jan. 1, 1944. In the meantime a syllabus covering the knowledge required of the candidate has been prepared and is available to those who request it.)

Admission to the examination for certification in neurology or psychiatry requires a total experience of not less than five years. This period shall include the following:

1. A period of study, after the general internship, of not less than three full years in institutes, hospitals, clinics, dispensaries, laboratories, and other institutions recognized by the Council of the American Medical Association and approved by the American Board of Psychiatry and Neurology as competent to provide a satisfactory training in psychiatry and/or neurology.

(a) As subject matter,

Neuro-anatomy
Neurophysiology
Neuropathology
Clinical neurology

Psychobiology
Psychopathology
Neurodiagnosis
Clinical psychiatry

and other basic medical sciences, which, in the opinion of this board, are necessary to the proper understanding and treatment of psychiatric and/or neurologic disorders.

2. An additional period of not less than two years of practice in psychiatry and/or neurology.

3. Candidates wishing to be admitted to the examinations for certification in both fields must have had a minimum of six years of experience in both fields.

PAYMENT OF FEES

The candidate on filing his application shall accompany it with an application fee of \$25. When notified by the secretary that he is eligible for examination he shall send the examination fee of \$25 to the secretary at least two weeks before the date of the examination. The certification fee of \$25 is payable upon notification by the board that certification has been awarded the candidate in Class I on his record. No fees will be returned.

The same examination is given whether a candidate applies for certification in psychiatry, or in neurology, or in both psychiatry and neurology. The board requires some proficiency in neurology on the part of those it certifies in psychiatry and vice versa, but judges the candidate in accordance with the certificate he seeks.

Should a candidate receive certification in either psychiatry or neurology, he may apply within three years for partial examination for the certificate in the complementary subject, upon payment of a complementary examination fee of \$10. After three years, the second application shall be considered a new application, with corresponding \$25 fees.

EXAMINATIONS

Date and places of examination are set by the board at its discretion and are announced in *The Journal of the American Medical Association*, in the *American Journal of Psychiatry*, in the *Journal of Nervous and Mental Disease*, and in the *Archives of Neurology and Psychiatry*.

The examinations are designed to test the ability of the candidates to meet the situations in which they might at any time be called upon as specialists to assume responsibility. They will be of such a type that no adequately trained individual will fail, yet they will be sufficiently searching so that the specialist-in-fact will be separated from the specialist-in-name. Each candidate is required to identify and to discuss the function of the more important anatomic structures in the brain and spinal cord, to discuss gross and microscopic pathologic specimens and to interpret roentgenograms dealing with neurologic disorders. He is examined orally on the subjects of psychobiology and psychopathology. These examinations in the preclinical subjects usually last about two hours. Each candidate examines two patients with neurologic disorders and two with psychiatric disorders, and discusses with the examiners the various problems involved. One hour, on the average, is allotted to each of these four clinical examinations. The manner of examining both neurologic and psychiatric patients and the reasoning and deductions therefrom constitute the most important part of the examination. Some acquaintance with the history of psychiatry and neurology, with the body of doctrine, and with the recent advances, is presupposed.

REEXAMINATIONS

A candidate who has failed in one examination is eligible to reexamination in the whole subject, within three years, on payment of a reexamination fee of \$10. A candidate who has failed in one examination and who does not apply for reexamination within three years or a person who has applied within that time but who has failed a second time will be considered a new applicant, with corresponding \$25 fees. The \$10 reexamination fee also applies to candidates conditioned in one or more subjects at any time within three years of the first examination, and is payable before each reexamination.

HANDLING OF APPLICATIONS

An application, in order to be considered at any meeting, must be in the hands of the secretary of the board not less than seventy days before the date of such meeting.

The secretary of the board on receipt of an application shall forthwith make inquiries from those to whom the candidate refers and from such other persons as the secretary may deem desirable and shall verify the candidate's record from the biographical records of the American Medical Association, after which he shall forward the application to the committee on credentials. This committee shall consider the application and other information available and notify the secretary whether the application is accepted. The certification of a candidate in either psychiatry or neurology, or both, shall be approved by a majority of the members of the entire Board at any meeting held for such certification.

PLEDGE

Each candidate is required to sign the following pledge:

"I hereby make application to the American Board of Psychiatry and Neurology, Incorporated, for the issuance to me of a certificate of qualification as a specialist in (a) Psychiatry; (b) Neurology; (c) Psychiatry and Neurology (check the one desired) and for examination relative thereto, all in accordance with and subject to its rules and regulations. Upon the issuance of the certificate I agree to and do become bound by the by-laws of the American Board of Psychiatry and Neurology, Inc., insofar as applicable.

"I agree to disqualification from examination or from the issuance of a certificate of qualification or to forfeiture and redelivery of such certificate of qualification in the event that any of the rules governing such examination are violated by me or for any one of the reasons set forth in the by-laws. I agree to hold said American Board of Psychiatry and Neurology, Inc., its members, examiners, officers and agents, free from any damage or claim for damage or complaint by reason of any action they, or any of them, may take in connection with this application, such examination, the grade or grades given with respect to any examination, and/or the failure of said corporation to issue to me such certificate of qualification."

RULES AND REGULATIONS

(ART. VII, SEC. 5, OF THE BY-LAWS)

The board of directors, from time to time, by resolution adopted by the affirmative vote of a majority then in office, may adopt, amend and repeal rules and regulations respecting

requirements of applicants, the nature and extent of examinations and investigations and issuance of certificates.

REVOCATION OF CERTIFICATES
(ART. VII, SEC. 6, OF THE BY-LAWS)

All certificates issued by the corporation shall be issued subject to the provisions of the certificate of incorporation and of the by-laws of the American Board of Psychiatry and Neurology, Inc. Each such certificate shall be subject to revocation in the event that:

(a) The issuance of such certificate or its receipt by the physician shall have been contrary to or in violation of any of the provisions of the corporation's certificate of incorporation or by-laws; or

(b) The physician so certified shall not have been eligible in fact to receive such certificate, irrespective of whether or not the facts constituting him so ineligible were known to any or all of the directors of the corporation or could have been ascertained by any or all of the directors of the corporation at the time of the issuance of such certificate; or

(c) The physician so certified shall have made any deliberate misstatement of fact in his application for such certificate or in any other statement or representation to the corporation, its directors, representatives or agents; or

(d) The physician so certified shall have been convicted by a court of competent jurisdiction of a felony or of any misdemeanor involving, in the opinion of the board of directors of the corporation, moral turpitude in connection with his practice of medicine; or

(e) The physician so certified shall have had his license to practice medicine revoked or shall have been disciplined or censured as a physician by any court or other body having proper jurisdiction and authority.

FORM OF CERTIFICATE

The secretary shall have prepared subject to the approval of the board members a form of certificate containing the following wording:

THE AMERICAN BOARD OF PSYCHIATRY AND
NEUROLOGY, INC.

This is to certify that.....has satisfied the requirements of the board and is hereby certified as qualified to practice the specialty of Psychiatry and/or Neurology.

(Signed) President.....
Vice President.....
Secretary

Communications should be addressed to the secretary.

AMERICAN BOARD OF RADIOLOGY, Inc.

GEORGE W. HOLMES, President, Boston.
J. W. PIERSON, Vice President, Baltimore.
BYRL R. KIRKLIN, Secretary-Treasurer, 102 Second Avenue,
S.W., Rochester, Minn.
D. S. CHILDS, Syracuse, N. Y.
A. C. CHRISTIE, Washington, D. C.
EDWIN C. ERNST, St. Louis.
EDWARD L. JENKINSON, Chicago.
LYELL C. KINNEY, San Diego, Calif.
U. V. PORTMANN, Cleveland.
DOUGLAS QUICK, New York.
LEROY SANTE, St. Louis.
E. H. SKINNER, Kansas City, Mo.
M. C. SOSMAN, Boston.
ROLLIN H. STEVENS, Detroit.
BERNARD P. WIDMANN, Philadelphia.

HISTORY AND AUTHORITY FOR ORGANIZATION

The medical profession has long felt that there should be a standard of minimal requirements for the practice of any specialty in medicine in order to protect the public, the profession in general, and the specialists themselves. Some of the states have attempted by statute to prescribe such requirements in certain branches. Unless a better method of regulation were found, the other states would be likely to enact similar laws. The result would be forty-eight different standards for each of the many medical specialties. Obviously, a more practicable solution would be for each special group to put its own house in order and place its mark of approval on those qualified to practice as specialists in that particular field. Accordingly, in 1932, five nation-wide radiologic organizations, the Section on Radiology of the American Medical Association, the American Roentgen Ray Society, the Radiological Society of North America, the American College of Radiology, and the American Radium Society, each appointed a committee of three members to confer and investigate the feasibility of establishing a quali-

ying board. The following men were appointed by these five organizations: Drs. G. W. Holmes, J. W. Pierson, E. L. Jenkinson, W. E. Chamberlain, E. C. Ernst, W. F. Manges, L. K. Sante, L. C. Kinney, A. C. Christie, Albert Soiland, W. W. Wasson, Henry Schmitz, Lester Hollander, Rollin H. Stevens and B. R. Kirklin.

This combined committee met at Milwaukee in 1933, during the meeting of the American Medical Association, agreed unanimously that such a board should be established and so reported to the respective organizations. Each of the organizations approved the report, appointed three representatives, and empowered them to proceed to the formation of a national radiologic board. The members of the board thus chosen were: Drs. W. F. Manges, L. R. Sante and B. R. Kirklin, representing the American Roentgen Ray Society; Drs. A. C. Christie, E. C. Ernst and E. L. Jenkinson (succeeding Dr. Byron H. Jackson, originally appointed) representing the American College of Radiology; Drs. R. H. Stevens, Henry Schmitz and H. K. Pancoast, representing the American Radium Society; Drs. L. J. Menville, M. C. Sosman and Albert Soiland, representing the Radiological Society of North America, and Drs. L. C. Kinney, J. W. Pierson and G. W. Holmes, representing the Section on Radiology of the American Medical Association.

The board was incorporated, organized and held its first meeting in Washington, D. C., in May 1934; at that time the by-laws were adopted and provision was made by resolution for its proper function. The officers of the board elected at this meeting were:

Dr. H. K. Pancoast, President.
Dr. A. C. Christie, Vice President
Dr. B. R. Kirklin, Secretary-Treasurer.

This move put into action the determined effort on the part of these five national organizations to improve the standards of the practice of radiology. It expects to accomplish this by various activities, such as the investigation and encouragement of facilities for graduate extension study and active clinical assistantships for men desiring to specialize in radiology; it will endeavor by regular examinations to determine the competence of specialists in radiology who apply for the certificate.

During 1935 the American Board of Radiology was accepted for membership in the Advisory Board for Medical Specialties and was also approved by the Council on Medical Education and Hospitals of the American Medical Association. Hereafter the list of Diplomates of the Board will take the place of the Council's list of approved radiologists, and the latter list will be discontinued.

PURPOSES

First: To encourage the study and promote and regulate the practice of radiology.

Second: To elevate the standards and advance the cause of radiology by encouraging its study and improving its practice.

Third: To determine the competence of specialists in radiology; to arrange, control and conduct investigations and examinations; and to test the qualifications of voluntary candidates for certificates to be issued by the board.

Fourth: To serve the public, physicians, hospitals and medical schools by preparing lists of practitioners who shall have been certified by the board.

VALUE OF CERTIFICATE

The national radiologic organizations which have participated in the formation of the board and are sponsoring its activities, as well as other organizations, attach considerable importance to its certificate. It is expected that both the medical and the lay public, including hospital directors, will soon come to utilize the certificate from this board as a means of discriminating between those who are well grounded as specialists in radiology and those who are not.

To this end lists of those holding certificates from this board will be published and issued from time to time by the board. Similar lists will be published by the *American Journal of Roentgenology and Radium Therapy, Radiology, and The Journal of the American Medical Association*. The Directory of the American Medical Association will indicate by a numerical symbol in the biographic data of those whose names are eligible to appear on these lists that they are diplomates of this board.

For emphasis it is repeated that the board does not intend in any way to interfere with or limit the professional activities of any duly licensed physician, but it does aim toward standardized qualifications for those who claim to be specialists in radiology.

CERTIFICATES

A certificate will be issued to each candidate who meets the requirements of the board, to the effect that the holder of the certificate has had adequate training in radiology and has successfully fulfilled the requirements of the board.

A certificate granted by this board does not of itself confer, or purport to confer, any degree, or legal qualifications, privileges, or license to practice radiology. Certificates of the board shall be issued upon one of two forms:

1. A certificate to the effect that the applicant has been found qualified to practice radiology in all its branches.

2. A certificate to the effect that the applicant has been found qualified to practice radiology in one or more of the following special fields: (a) roentgenology; (b) diagnostic roentgenology; (c) therapeutic radiology.

DEFINITIONS

For the purposes of this board, the following definitions are adopted:

1. Radiology is that branch of medicine which deals with the diagnostic and therapeutic application of radiant energy including roentgen rays and radium.

2. Roentgenology is that branch of radiology which deals with diagnostic and therapeutic application of roentgen rays.

3. Diagnostic roentgenology is that branch of radiology which deals with the diagnostic application of roentgen rays.

4. Therapeutic radiology is that branch of radiology which deals with the therapeutic application of roentgen rays and radium.

GENERAL REQUIREMENTS

Each applicant for admission to the examination shall be required to present evidence that he has met the following standards:

(A) General Qualifications.*

(1) Satisfactory moral and ethical standing in the profession.

(2) A license to practice medicine.

(3) Membership in the American Medical Association, or, by courtesy, membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association.

(4) That the applicant holds himself out to be a specialist in radiology or one of its branches as defined under definitions, and that he uses roentgen rays or roentgen rays and radium either personally or under his direct supervision in a substantial portion of his practice.

(B) Professional Education.*

(1) Graduation from a medical school of the United States or Canada, recognized by the Council on Medical Education and Hospitals of the American Medical Association.

(2) Completion of an internship of not less than one year in a hospital approved by the same council.

(3) Three years' training in radiology or sufficient experience in lieu thereof.

(C) Special Training.* (To be effective Jan. 1, 1942.)

(1) A period of study after the internship of not less than three calendar years in an institution or radiologic department recognized by the same council and the board as competent to provide a satisfactory training in the field of radiology.

(2) This period of specialized preparation shall include:

(a) Graduate training in pathologic anatomy, radiophysics, and radiobiology.

(b) An active experience of not less than twenty-four months in a radiologic department recognized by the board and the council as capable of providing satisfactory training.

(c) Examination in the basic sciences of radiology as well as in the clinical aspects thereof.

APPLICATIONS

The board desires to appraise the candidate's educational opportunities (premedical, medical and radiologic), the ability of his instructors, his hospital and teaching positions, his original investigations, his contributions to radiologic literature, his membership in medical societies, and his local and general reputation.

For this purpose, application must be made on a special blank which may be obtained from the secretary. No application will be considered unless made on the regular application blank. This application shall be forwarded with the required data, two unmounted photographs, and the fee of \$35, at least two months before the date of the examination.

FEE

A fee of \$35 must accompany each application blank. This fee will not be returned and no application will be considered until the fee is received. This fee has been carefully computed

*NOTE: In case of an applicant whose training has been received outside of the United States and Canada, the credentials must be satisfactory to the Advisory Board for Medical Specialties.

and is used entirely for administrative purposes. Members of the board and special examiners do not receive any compensation except for actual expenses connected with holding the examinations. As the number of candidates decreases, it may become necessary to raise the fee.

Checks should be made payable to the American Board of Radiology.

EXAMINATIONS

Each year the board will hold an examination in conjunction with the annual meeting of the American Medical Association, and, when sufficient applications are on file, a second examination will be held in conjunction with the annual meeting of the American Roentgen Ray Society and/or the Radiological Society of North America.

For the present, examinations consist of practical and oral examinations, although written examinations may be added later. The examinations are designed to test the candidate's fitness to practice radiology or one of its branches as a specialty. The board will endeavor to adapt this examination to the candidate's experience and years of practice. It will try especially to ascertain the breadth of his clinical experience, his knowledge of the basic sciences of radiology, and likewise his knowledge of the recent literature on radiology, and his general qualifications as a specialist in this branch of medicine.

The examination consists of tests in film interpretation and an oral examination in pathology, physiology, radiophysics and radiobiology, as well as the clinical applications of roentgen rays and radium. The applicant is also examined in "professional adaptability," in an attempt to ascertain his attitude toward his fellow practitioners and his patients.

Whenever an applicant fails to pass the examination, the board, if requested, will make suggestions as to suitable courses of instruction for the purpose of overcoming his deficiencies.

REEXAMINATIONS

If the candidate fails in an examination he will be admitted to a second examination after one year has elapsed but not more than three years. He must give sixty days' notice of his intention to appear for reexamination and pay an additional fee of \$15. If a candidate who has failed does not appear for reexamination before the expiration of three years, he will be required to make a new application and pay an additional fee of \$35.

A candidate having failed twice must file a new application and pay an additional fee of \$35.

FINAL ACTION OF THE BOARD

The final action of the board is based on the applicant's professional record, training, and attainments in the field of radiology, as well as on the results of his examination. Any radiologist who is practicing radiology honorably and efficiently should have no difficulty in obtaining a certificate. This board has been organized, not to prevent qualified radiologists from obtaining certificates, but to assist them in becoming recognized in their communities as men competent to practice in the special field of radiology.

REVOCATION OF CERTIFICATES

Certificates issued by this board are subject to the provisions of the Articles of Incorporation and the By-Laws. According to Article IX, Section 4, of the By-Laws "Any certificate issued by the Board of Trustees shall be subject to revocation in the event that:

(a) The issuance of such certificate or its receipt by the physician so certified shall have been contrary to or in violation of any provision of the Certificate of Incorporation of this the American Board of Radiology or of these by-laws; or

(b) The physician or party so certified shall not have been eligible in fact to receive such certificate; or

(c) The physician or party so certified shall have made any misstatement of fact in his application or in any other communication to the board or its representatives; or

(d) The physician or party so certified shall have been convicted by a court of competent jurisdiction of a felony or of any misdemeanor involving, in the opinion of the Board of Trustees, moral turpitude; or

(e) If the physician or party so certified shall have had his license to practice medicine revoked or shall have been expelled from one of the societies or organizations which is represented by this corporation through eligibility of such society or organization to nominate and appoint members of this corporation."

Communications should be addressed to the secretary.

AMERICAN BOARD OF SURGERY, Inc.

ALLEN O. WHIPPLE, Chairman, New York.

FRED W. RANKIN, Vice Chairman, Lexington, Ky.

J. STEWART RODMAN, Secretary-Treasurer, 225 South Fifteenth Street, Philadelphia.

EDWARD D. CHURCHILL, Boston.

FREDERICK A. COLLIER, Ann Arbor, Mich.

VERNON C. DAVID, Chicago.

ARTHUR W. ELTING, Albany, N. Y.

THOMAS M. JOYCE, Portland, Ore.

THOMAS G. ORR, Kansas City, Mo.

ROBERT L. PAYNE, Norfolk, Va.

ERWIN R. SCHMIDT, Madison, Wis.

PHILEMON E. TRUESDALE, Fall River, Mass.

HISTORY

The organization of the American Board of Surgery was completed on Jan. 9, 1937. A plan for this organization had been carefully studied by a general committee representative of certain general and sectional surgical societies called together through the initiative of the American Surgical Association. As a result of the deliberations of this general committee a tentative plan of organization was adopted. This plan was reported to the cooperating surgical societies and was approved with the understanding that the board, when organized, would have the power to change or modify the proposed plan as it saw fit. This board has been created in accordance with the action of the Advisory Board for Medical Specialties as approved by the Council on Medical Education and Hospitals of the American Medical Association, which has named certain specialty fields as being suitable to be represented by such boards. These boards have the twofold purpose of certifying those found to be qualified after meeting reasonable requirements, and of improving existing opportunities for the training of specialists within the field concerned. This is to be done for the protection of the public and the good of the specialty.

PERSONNEL

* The cooperating surgical societies selected jointly to form the board appointed their representatives as follows:

The American Surgical Association.....	3
The Surgical Section of the A. M. A.....	3
The American College of Surgeons.....	3
The Southern Surgical Association.....	1
The Western Surgical Association.....	1
The Pacific Coast Surgical Association.....	1
The New England Surgical Society.....	1

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The term of membership is for six years. Each cooperating association has the appointing power of its representatives subject to the approval of the board.

PURPOSES

(a) To conduct examinations of satisfactory candidates who seek qualification by the Board.

(b) To issue certificates of qualification to all those meeting the board's requirements.

(c) To improve the opportunities for the training of the surgeon.

REQUIREMENTS

(A) GENERAL QUALIFICATIONS

1. Moral and ethical standing in the profession satisfactory to the board.

The board, believing that the practice of "fee splitting" is pernicious, leading as it does to a traffic in human life, will reserve the right to inquire particularly into any candidate's practice in regard to this question.

2. Membership in the American Medical Association or, by courtesy, membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the A. M. A. Except as here provided, membership in other societies shall not be required.

3. Those who have limited their activities to the practice of surgery.

4. In exceptional instances the board may, in its discretion, accept for examination candidates who have met all preliminary requirements and have been in practice from six to sixteen years but whose formal training does not comply with the full requirements to be exacted in the future.

* The first three of these associations being national in scope, were allotted three representatives each, the remaining associations, etc.

The board recognizes two groups of candidates who may be eligible for certification.

(A) The Founders Group—those who have already amply demonstrated their fitness as trained specialists in surgery. Application for membership in this group will be open until January 9, 1940. Those who receive the board's approval will be accepted for membership without examination from the following:

1. Those who from the time of the board's organization, January 9, 1937, hold the position of Professor or Associate Professor of Surgery in the approved medical schools of the United States or Canada.

2. Those who for fifteen years prior to the board's organization have limited their practice to surgery and have met the general qualifications required.

3. Such members of the cooperating societies represented on the board, in good standing January 9, 1937, who may be invited to membership in this group.

This group was closed January 1, 1940; no further applications received.

(B) Qualified by examination—

In addition to the general qualifications the requirements for this group shall be as follows:

(B) PROFESSIONAL STANDING

1. Graduation from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the A. M. A., or graduation from an approved foreign school.

2. Completion of an internship of not less than one year in a hospital approved by the same Council, or its equivalent in the opinion of the board. This internship may be rotating or one devoted to a single branch of medicine as, for example, surgery, medicine, pathology, etc.

(C) SPECIAL TRAINING

After the completion of the year's internship there shall be a period of special training in surgery of not less than five years. During this period one's entire time must be devoted to surgical training supplemented by sufficient experience in the basic sciences to comply with the provisions of Paragraph 2. Such training may be taken in a recognized graduate school of medicine, as resident in surgery in an acceptable hospital, or under a sponsorship accredited by the American Board of Surgery for such training.† By the latter statement is meant that one may secure the necessary training as an assistant to an accredited surgeon, provided suitable facilities for the education of the candidate are offered. It is understood that the board will accept a combination of training as outlined above.

(For example, one may take a graduate course in an acceptable graduate school for one year, a residency of two years, and an assistantship of two years.)

This period of special training shall be of such character that the relation of the basic sciences of anatomy, physiology, pathology, bacteriology and biochemistry is emphasized. Knowledge of these sciences as applied to clinical surgery will be required in the examination.

Adequate operative experience in which the candidate has assumed the whole responsibility will be required.

The above requirements, especially those referring to surgical training, are subject to change from time to time as the existing opportunities for training in this field of specialization may be broadened.

EXAMINATIONS

The qualifying examination will be divided into Part I (written) and Part II (clinical, bedside and laboratory). In both of these parts a knowledge of the practical application of the sciences fundamental to surgery will be required as previously stated.

PART I

This may be given simultaneously in as many centers as the board may determine suitable for the purpose. A candidate to be eligible for Part I must meet all requirements for Group B candidates. A card of admission to this part of the examination will be forwarded to the candidate from the secretary's office, certifying that these requirements have been met, as well as due notice as to the time and place of the examination.

The examination in Part I shall cover a one day period. There shall be two sessions of three hours each. This written examination shall concern itself primarily with general surgical problems and in addition the application of the basic sciences of surgery to these problems.

† The board makes no attempt to classify hospital residencies, usually accepting those approved by the American College of Surgeons and the Council on Medical Education and Hospitals of the American Medical Association.

PART II

In order to be eligible for Part II a candidate must have successfully passed Part I in addition to having met the necessary preliminary requirements and having presented definite evidence of an adequate training in operative surgery satisfactory to the board.

This part of the examination shall be oral and practical and cover a one-day period, the schedule being arranged somewhat as follows:

8-9 A. M.—REGISTRATION

9 A. M.—12 Noon.—Clinical Surgery (diagnosis and management and the application of physiology, biochemistry and bacteriology, as the case being examined on may offer an opportunity for doing so. X-ray plate interpretation will also be included).

2-5 P. M.—Applied anatomy and surgical pathology.

The examinations in Part II are conducted in certain centers of the country selected by the board. It is the board's desire to arrange these centers so as to geographically meet the needs of the candidates, provided suitable examination facilities can be met. The examination in this part will be conducted by members of the board living in the region of the country in which they are held, together with selected members of the Founders Group resident in the center chosen.

GRADES

A candidate must receive a passing average for each part to be entitled to the board's certificate. No candidate shall pass a part who does not receive a grade of 60% or over in each subject of such a part. An average grade of 75% shall be considered as passing in each part. The following values have been assigned to Part II on the basis of the total of 100%; clinical surgery 50%, anatomy 30%, pathology 20%.

A candidate who fails in his examination in Part I shall have his papers reviewed by the examination committee.

REEXAMINATIONS

Candidates may be reexamined as often as they desire provided one year shall elapse between examinations, except that the board may, for good and sufficient reason, deny a candidate the privilege of reexamination.

Candidates shall be required to pay the same fees for Parts I and II at each reexamination in these parts.

FEES

The fee for Group A, Founders Group, shall be \$25.

The fee for Group B shall be \$75, payable as follows: \$5 registration fee, which shall be returned if the candidate is not accepted for examination; \$20 for Part I; and \$50 for Part II.

This board is a non-profit organization. All fees will be used, after a reasonable amount is set aside for necessary expenses in maintaining its office, conducting examinations, etc., to aid in improving existing opportunities for the training of the surgeon.

CERTIFICATE

A certificate attesting to a candidate's qualification in surgery after meeting the requirements will be issued by the board, having been signed by its officers.

REVOCATION OF CERTIFICATE

Any certificate issued by the board shall be subject to revocation by the board at any time in case it shall determine in its sole judgment that a candidate, who has received a certificate, either was not properly qualified to receive it or has become disqualified since its receipt.

Proper forms for making application, and other information, will be furnished by the secretary-treasurer.

AMERICAN BOARD OF UROLOGY, Inc.

HERMAN L. KRETSCHMER, President, Chicago.

CLARENCE G. BANDLER, Vice President, New York.

GILBERT J. THOMAS, Secretary-Treasurer, 1009 Nicollet Avenue, Minneapolis.

NATHANIEL P. RATHBUN, Brooklyn.

GEORGE GILBERT SMITH, Brookline, Mass.

CHARLES C. HIGGINS, Cleveland.

HENRY G. BUGBEE, New York.

ALFRED I. FOLSON, Dallas, Texas.

THOMAS LEON HOWARD, Denver.

ORGANIZATION

At the annual meeting of the American Association of Genito-Urinary Surgeons held at Niagara Falls, Ont., Canada, May 26-28, 1932, Dr. William F. Braasch called attention to the various qualification boards which had been established, or were

This period of specialized preparation should include:

- (a) graduate training in anatomy, physiology, pathology, and the other basic medical sciences which are necessary to the proper understanding of the disorders and treatment involved in the specialty of Urology.
- (b) an active experience of not less than eighteen months in hospital clinics, dispensaries and diagnostic laboratories recognized by the Council on Medical Education and Hospitals of the American Medical Association as competent in the diagnosis and treatment of urologic conditions.

(c) examinations in the medical sciences basic to the specialty of Urology, as well as in the clinical, laboratory and public health aspects.

2. An additional period of not less than two years in the private practice of urology in the city from which he makes application.

These special requirements conform with the suggestions made by the Council on Medical Education and Hospitals of the American Medical Association.

C. Make application to the American Board of Urology, Inc., whose duty it shall be to investigate the applicant's credentials and make a survey of his character;

D. Assure the board that he is engaged in the practice of urology and that he intends to continue to be so engaged;

E. Membership in the American Medical Association, or comparable national medical society, is recommended.

FEE

The examination fee will be \$75. Fifteen dollars must accompany the application. Sixty dollars is to be paid when the applicant is accepted as a candidate for certification. This is the total expense to the candidate. If a candidate fails in his examination, he will be permitted a second examination after one year, or within three years, without additional fee, but he must give sixty days' notice of his intention to appear for reexamination. After an applicant has failed twice, he must file a new application blank accompanied by a second fee. If an applicant is lacking in any of the requirements as stated above, he will be considered ineligible for examination and classification and his fee will be returned. In no other instance, however, will a refund of the examination fee be possible.

REQUIREMENTS FOR CERTIFICATION

According to the By-laws of the American Board of Urology, Inc., applications received from applicants for certification shall be examined by the Credentials Committee and reviewed by the board. When additional data are required to complete the application, these will be requested by the secretary's office.

The requirements for certification include: personal appearance before the board; preparation of fifty case reports of major urological cases under the candidate's own supervision which must contain all items essential for diagnosis, therapy, prognosis, results of treatment, etc.; oral and clinical examinations; written examinations.

In specific instances, the board may waive any part of these requirements, with the exception of the item of personal appearance.

Each candidate will receive a notice of the time and place of the examinations, and an appointment for his personal appearance before the board.

EXAMINATIONS, WHERE HELD, AND REPORTS OF CASE HISTORIES

The board will hold one examination a year. This will be held at a time or place that the board may select or deem expedient.

1. The *written examinations* are designed to test the candidate's preparation in, and his knowledge of, the whole subject of urology, including the fundamental subjects: pathology, anatomy, physiology, embryology, bacteriology, physiological chemistry and endocrinology. The examination in pathology will consist of the identification of gross specimens and of sections of tissue observed through the microscope. The examination in anatomy, physiology, embryology, bacteriology, physiological chemistry, and endocrinology will be a test of the candidate's working knowledge of these subjects as they are related to the practice of urology.

2. The oral and clinical examinations will consist of discussions of common urologic conditions. The subjects forming the basis of the oral examinations are urography, diseases of the genital organs, including the prostate, diseases of the urinary bladder, and diseases of the ureters and kidneys. The oral examination may deal directly with the reports of case histories which the candidate has submitted. This examination will ascertain the candidate's familiarity with recent urologic literature, the breadth of his clinical experience, and his general qualifications as a specialist in urology. The applicant also will be examined in "professional adaptability" in an attempt to ascertain his attitude toward his fellow practitioners and his patients.

3. The *reports of fifty major urological cases* must be consecutive and must have been under the candidate's own supervision. They must not be abstracted. Sufficient data should appear in these so the examiner will know that a proper history was taken and that a thorough examination, including a complete physical survey, was made.

Case reports that are copied verbatim from a hospital record are not desired. They must be identified by the name of the hospital and the case admission numbers, with the pertinent

dates. The reports must be typewritten (on 8½ by 11 inch paper) and in duplicate, but need not be on any special forms.

The data should be placed under proper headings and the arrangement of these should conform to the sequence of events incidental to the patient's admission to the hospital or clinic, the examinations made and treatment prescribed.

Each candidate must assume personal responsibility for the data in his case reports, including autopsy findings and interpretations of urograms. If the reports are prepared by record clerks, interns, or fellows, they should be reviewed by the candidate and careful attention given to the spelling and the correct use of medical terms before submitting them to the secretary of the board. Case reports are documentary evidence of a candidate's method of practice, and the data in them and the manner in which these are presented reflect this.

Satisfactory case reports must be submitted before a candidate will be permitted to continue with other parts of his examination. If case reports are pronounced unsatisfactory by more than one examiner, the candidate will be informed of this and requested to prepare others. Criticisms and unsatisfactory reports will be sent to the candidate upon request.

Case reports must be submitted to the secretary of the board at least ninety days before the time set for the oral-clinical examination.

Although the board requires that all the essential points of the history and examination be given, as well as a complete description of the surgical procedure, emphasis should be placed

is: preoperative diagnosis; clinical and summary of postoperative course with

special reference to morbidity; clinical findings at time of discharge from the hospital and subsequent "follow-up" reports.

A final short paragraph must be prepared for each case by the candidate. These data must include the candidate's interpretation of the history in terms of pathology; the basis for the diagnosis; the facts that determined the treatment prescribed, whether surgical or otherwise; the course of treatment to be pursued following discharge from the hospital or clinic; a critical discussion of the knowledge gained from the proper handling of the case, or from the errors made (if any) in the diagnosis and method of treatment.

Complete separate index lists of the case history reports submitted must accompany the records. If the reports are obtained from more than one hospital they must be consecutive, as mentioned before, and a separate complete index list of each group of reports should be provided. These lists must state the operator's name at the head of each page, the name of the patient, the hospital and admission number, and the date of operation. The lists will be filed in the secretary's office for verification purposes.

Case reports will be reviewed by examiners living in localities other than those where the candidates practice.

FINAL ACTION

Final action is based on the applicant's training, his professional record, his attainments in the field of urology, and the results of the examinations. Any well trained urologist will have no difficulty in obtaining the board's certification. This board is organized not to prevent qualified urologists from obtaining certificates, but to assist them in becoming recognized in their communities as men competent to practice in the special field of urology.

The activities described above proceed from the certificate of incorporation in which is stated the nature of the business, objects, and purposes proposed to be transacted and carried out by this corporation.

REVOCATION OF CERTIFICATE

Certificates issued by this board are subject to the provisions of the Articles of Incorporation and the By-laws. According to Article IX, Section 4, of the By-laws, "each certificate may be revoked in the event that:

(a) The issuance of such certificate or its receipt by the physician so certified shall have been contrary to, or in violation of, any provision of the Certificate of Incorporation of this, the American Board of Urology, Inc., or of the By-laws; or

(b) The physician or party certified shall not have been eligible to receive such certificate, irrespective of whether or not the facts constituting him so ineligible were known to, or could have been ascertained by, the directors of the board at the time of the issuance of such certificate; or

(c) The physician or party so certified shall have made any misstatement of fact in his application for such certificate or in any other statement or representation to the board or its representatives; or

(d) The physician so certified, at any time while continuing to practice, shall cease to practice urology; or

(e) The physician so certified shall at any time have neglected to maintain the degree of competency in the practice of the specialty of urology as set up by the board, and shall refuse to submit to reexamination by the board.

The Board of Trustees of this Corporation shall have the sole power, jurisdiction and right, to determine and decide whether or not the evidence or information before it is sufficient to constitute one of the grounds for revocation of any certificate issued by this corporation, and the decision of such Board of Trustees in the premises shall be final.*

Communications should be addressed to the secretary-treasurer.

THE AMERICAN BOARD OF PLASTIC SURGERY, INC.

JOHN STAIGE DAVIS, Chairman, Baltimore.

GEORGE M. DORRANCE, Vice Chairman, Philadelphia.

VILRAY P. BLAIR, Secretary-Treasurer, 400 Metropolitan Building, St. Louis.

GUSTAVE AUFRICHT, New York.

JAMES BARRETT BROWN, St. Louis.

ROBERT H. IVY, Philadelphia.

HAROLD L. D. KIRKHAM, Houston, Tex.

WILLIAM S. KISKADDEN, Los Angeles.

SUMNER L. KOCH, Chicago.

WILLIAM E. LADD, Boston.

GORDON B. NEW, Rochester, Minn.

GEORGE WARREN PIERCE, San Francisco.

ERNEST FULTON RISDON, Toronto, Ont., Can.

FERRIS SMITH, Grand Rapids, Mich.

JEROME P. WEBSTER, New York.

HISTORY

The American Board of Plastic Surgery, tentatively organized in June 1937, by representatives of widely distributed groups interested in this special type of surgery, received recognition as a subsidiary of the American Board of Surgery in May 1938, and was given the status of a major board in May 1941 by the Advisory Board for Medical Specialties. It is composed of representatives from the American Association of Oral and Plastic Surgeons, the Surgical Section of the American Medical Association, the American Surgical Association, the Southern Surgical Association and the American College of Surgeons.

The aim of the American Board of Plastic Surgery is to encourage the study, improve the practice, and advance the cause of plastic surgery, and to grant and to issue certificates of recognition of special knowledge in plastic surgery to surgeons meeting the requirements.

PURPOSES OF THE BOARD

The purposes of the board are:

1. To elevate and establish standards of fitness to practice plastic surgery.
2. To arrange and conduct examinations for determining the qualifications of those who request a certificate of their ability in the field of plastic surgery, to establish qualification requirements for applicants, and to confer certificates upon those who meet the requirements of the board.
3. To improve and widen the existing opportunities for the training of the plastic surgeon.
4. To study and evaluate local and foreign teaching centers and opportunities for experience in and the study of plastic surgery.
5. The action or decision of the American Board of Plastic Surgery regarding certification of any candidate shall be final.

GENERAL QUALIFICATION REQUIREMENTS

1. Moral and ethical standing in the profession satisfactory to the board.
2. Membership in the American Medical Association, or, by courtesy, membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association.

PROFESSIONAL QUALIFICATION REQUIREMENTS

1. Graduation from a medical school recognized by the Council on Medical Education and Hospitals of the American Medical Association.
2. Completion of an internship of not less than one year in a hospital approved by the said Council, or what would constitute, in the opinion of the board, the equivalent of such training.

For certification in the field of plastic surgery, the following special training shall be required:

(a) A period of graduate study in surgery of not less than two years beyond the intern year to be taken in a recognized graduate school or hospital.

(b) An additional period of not less than two years of graduate study in plastic surgery, also to be taken in a recognized graduate school or hospital. This period of training shall cover the technical and clinical phases of plastic surgery, and the basic sciences of anatomy, physiology, pathology, bacteriology, and biochemistry as they are related to plastic surgery.

(c) An additional period of two years study and/or practice in plastic surgery.

The above training may be taken in a recognized graduate school of medicine, or as resident in surgery in an acceptable hospital, or under a sponsorship accredited by the American Board of Plastic Surgery for such training. By the latter statement is meant that one may secure the necessary training as an assistant to an accredited surgeon, provided suitable facilities for the education of the candidate are offered. It is understood that the board will accept a combination of such training as outlined above; for example, one may take a graduate course in an acceptable graduate school for one year, a residency for two years, and an assistantship in plastic surgery for two years. Where circumstances permit the applicant to major in plastic surgery during the second of the two years on a general surgical service, the second year of the two years of general training may, with the approval of this board, be credited on his period of special training in plastic surgery.

In exceptional instances, the board may, at its discretion, accept for examination candidates who have met all the above preliminary requirements, have been graduated in medicine at least ten years but whose formal training does not comply with the full requirements to be exacted in the future.

CLASSIFICATION OF APPLICANTS

Until June 1, 1942* applicants for certification shall be classified as follows:

Group A—Founders' Group.—Those to be certified without formal examination as to professional qualifications. This group shall be composed of men who have already amply demonstrated their fitness to do acceptable plastic surgery and who have been graduated in medicine at least ten years.

Group B—Examinees' Group.—Those to be formally examined as to professional qualifications. To be eligible for examination by this board, all candidates shall be required to possess the preliminary and basic medical qualifications accepted by the Advisory Board for Medical Specialties as applied to all specialties.

Applicants who have qualified under Group B shall be required to submit twenty-five diversified case reports, together with photographs of before and after treatment made from unretouched negatives.

EXAMINATIONS

The qualifying examination will be divided into Part I, written, and Part II, oral and practical.

Part I shall consist of a written examination upon questions prepared by the examining committee which concern the theory and practice of plastic surgery. In addition to the above, the examination shall include questions upon applied anatomy, applied physiology, pathology, clinical laboratory methods, local and general anesthesia, shock, hemorrhage, the handling of tissues, wound healing, related bacteriology, and surgical accidents, all as related to plastic surgery.

Part II shall, as far as possible, be of a practical nature, and shall be conducted by no fewer than two competent judges, selected by the examining committee.

The clinical examination shall include any or all of the following:

(a) The exhibition of patients who have undergone or who are undergoing treatment.

(b) Examination, diagnosis, and presentation of a plan of correction by the applicant of cases provided by the examiners.

(c) Oral examination of the applicant and observations made in the operating room, treatment rooms, and wards.

In order to be eligible for Part II of the examination, a candidate shall have successfully passed Part I.

A candidate shall be required to receive a passing average for each Part in order to receive the board's certificate. No candidate shall pass Part I or Part II of the examination who does not receive a grade of 65 per cent or over in each subject of each Part. An average grade of 75 per cent shall be considered as passing.

* At the discretion of the board this closing date for the Founders' Group may be extended until June 1, 1943.

REEXAMINATIONS

Candidates may be reexamined as often as they desire, provided that one year shall elapse between examinations, except in such case as the board may, for good and sufficient reason, deny a candidate the privilege of reexamination.

FEES

The fee for the examination and the certificate of the American Board of Plastic Surgery is \$100. Of this sum \$25, which is not returnable, must accompany the case reports; \$25 should be paid when Part I of the examination is taken, and \$50 when Part II is taken. There shall be no refunds.

This fee may be increased at the discretion of the board, when the number of candidates decreases and when the expenses of the examinations and other activities of the board demand.

This board is a nonprofit organization. The fees of candidates are used solely for defraying the actual expenses of the board. The members of the board and their associates receive no emoluments. All surplus moneys derived from fees will be used to aid in improving existing opportunities for the training of plastic surgery.

The fee for the Founders' Group is \$50.

CERTIFICATION

A certificate, bearing the seal of the board and the signatures of its officers, will be issued to each successful candidate attesting his qualification in plastic surgery.

REVOCATION OF CERTIFICATE

The American Board of Plastic Surgery shall have the sole power, jurisdiction, and right to determine and decide whether or not the evidence or information placed before it is sufficient to constitute grounds for revocation of any certificate issued by the board, and the decision of the board in the premises shall be final.

AMERICAN BOARD OF NEUROLOGICAL SURGERY, INC.

HOWARD C. NAFFZIGER, Chairman, San Francisco.
ALFRED W. ADSON, Vice-Chairman, Rochester, Minn.
R. GLEN SPURLING, Secretary-Treasurer, 404 Brown Building, Louisville, Ky.
PAUL C. BUCY, Chicago.
WINCHELL MCK. CRAIG, Rochester, Minn.
LEO M. DAVINOFF, Brooklyn.
LOYAL DAVIS, Chicago.
TEMPLE S. FAY, Philadelphia.
MAX M. PEET, Ann Arbor, Mich.
TRACY J. PUTNAM, New York.
ERNEST SACHS, St. Louis.
BYRON STOOKEY, New York.

ORGANIZATION

Recognizing the need for detailed training and special qualifications for the practice of neurological surgery, representatives of both the Society of Neurological Surgeons and the Harvey Cushing Society held an informal meeting in Chicago on March 27, 1939, to consider the advisability of the formation of a national certification board. Later the group was enlarged by representatives from the Section on Nervous and Mental Diseases of the American Medical Association, the Section on Surgery of the American Medical Association, the American Neurological Association, and the American College of Surgeons. Approval of the board by the Advisory Board for Medical Specialties and the Council on Medical Education and Hospitals of the American Medical Association was given. The American Board of Neurological Surgery was incorporated in the State of Delaware on Aug. 1, 1940.

The membership of the corporation was nominated as follows: five from the Society of Neurological Surgeons, three from the Harvey Cushing Society, one each from the American College of Surgeons, the Section on Nervous and Mental Disease of the American Medical Association, the Section on Surgery of the American Medical Association, and the American Neurological Association.

PURPOSES

A. To encourage the study, improve the practice, elevate the standards and advance the science of neurological surgery and thereby to serve the cause of public health.

B. To grant and issue to physicians duly licensed by law, certificates or other recognition of special knowledge in neurological surgery and to suspend and revoke the same.

C. Certificates granted or issued by the corporation shall not confer or purport to confer on any person any legal qualifi-

cation, privilege or license to practice neurological surgery, nor purport to be issued under or in pursuance to or by virtue of any statutory or governmental sanction or authority.

D. To determine by examination, investigation and otherwise the fitness and competence of specialists in neurological surgery who shall apply for certificates and to prepare, provide, control and conduct examinations, written, oral and otherwise, for such purpose and to determine the results of such examination.

E. To furnish to the public, hospitals, medical schools, medical societies and practitioners of medicine and surgery lists of neurological surgeons who from time to time have been granted certificates by this corporation.

GENERAL REQUIREMENTS

A. General qualifications.

1. Satisfactory moral and ethical standing in the profession.

2. License to practice medicine.

3. Membership in the American Medical Association or, by courtesy, membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association.

4. That the surgical activity of the applicant shall be limited to neurological surgery.

B. Professional education.

1. Graduation from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association, or graduation from a foreign school which is acceptable to the American Board of Neurological Surgery, Inc.

C. Special training, to be effective Jan. 1, 1940.

1. Completion of a surgical internship of not less than one year in a hospital approved by the Council on Medical Education and Hospitals of the American Medical Association, or its equivalent in the opinion of the board.

2. A period of graduate study in a recognized graduate school of medicine of not less than three years beyond the intern year, or in an approved hospital or under a sponsorship acceptable to the American Board of Neurological Surgery, Inc., for the training of neurological surgeons. This period of special training shall be of such a character that the relation of the basic sciences of anatomy, physiology, pathology, bacteriology and biochemistry is emphasized. Knowledge of these sciences as applied to the practice of neurological surgery will be required in the examination.

3. An additional period of not less than two years in the practice of neurological surgery.

D. Certification without examination.

1. On invitation by the board and written application made within two years from Jan. 1, 1940, the following may be accepted as eligible for certification upon approval of the board of directors and on the production of evidence of satisfactory moral and ethical standing in the profession.

(a) Individuals of professorial rank in approved medical schools of the United States or Canada whose surgical practice is limited to neurological surgery.

(b) Those who have specialized in neurological surgery for ten years prior to Jan. 1, 1940.

APPLICATION BLANK AND FEE

Application must be made on the special form which may be procured from the secretary. The application and examination fee for candidates is \$75 whether certified with or without examination. The completed application form should be returned to the secretary accompanied by an application fee of \$25. When notified by the secretary that he is eligible for examination he shall send the examination fee of \$50 to the secretary-treasurer at least two weeks before the date of examination. The application fee will be returned if the candidate is not accepted by the board for examination.

A candidate who has failed in one examination is eligible to reexamination in the subject, or subjects, in which he failed, within three years, on payment of a reexamination fee of \$10. A candidate who has failed in one examination and who does not apply for reexamination within three years or a person who has applied within that time but who has failed a second time will be considered a new applicant.

EXAMINATIONS

Examinations will be held in the spring and fall of each year at or near the time and place of a national meeting at the discretion of the board. Examinations will be oral and based upon broad principles of neurological surgery. The subject matter of the examination will be divided into six parts: (1) neuroanatomy and neurophysiology, (2) neuropathology and

bacteriology, (3) ophthalmology and x-ray diagnosis, (4) neuro-surgical problems, (5) organic neurology and (6) general surgery.

All communications should be addressed to the secretary-treasurer.

ADVISORY BOARD FOR MEDICAL SPECIALTIES

Organized 1933-1934 to coordinate graduate education and certification of medical specialists in the United States and Canada.

This Board reports directly to its member groups, and functions in close cooperation with the Council on Medical Education and Hospitals of the American Medical Association and with the Advisory Council on Medical Education.

The work of this Board has been aided by grants from the Josiah Macy Jr. Foundation of New York, but the Board is now supported by its component groups.

OFFICERS AND EXECUTIVE COMMITTEE

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WILLIAM P. WHERRY, Vice President, Omaha.
C. GUY LANE, Secretary-Treasurer, 416 Marlboro Street, Boston.
R. C. BUECKI, Philadelphia.
WALTER B. LANCASTER, Hanover, N. H.

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*(Corresponding Officer)

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The American Hospital Association
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The Federation of State Medical Boards of the U. S. A.
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The National Board of Medical Examiners
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The American Board of Ophthalmology
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The American Board of Otolaryngology
HARRIS P. MOSHER, Marblehead, Mass.
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The American Board of Obstetrics and Gynecology
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The American Board of Dermatology and Syphilology
HOWARD FOX, New York.
*C. GUY LANE, Boston.
The American Board of Pediatrics
BORDEN S. VEEDER, St. Louis.
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The American Board of Psychiatry and Neurology
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The American Board of Radiology
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The American Board of Urology
HERMAN L. KRETSCHMER, Chicago.
*GILBERT J. THOMAS, Minneapolis.
The American Board of Internal Medicine
ERNEST E. IRONS, Chicago.
*WILLIAM S. MIDDLETON, Madison, Wis.
The American Board of Pathology
ARTHUR H. SANFORD, Rochester, Minn.
*FRANK W. HARTMAN, Detroit.
The American Board of Surgery
ERWIN R. SCHMIDT, Madison, Wis.
*J. STEWART RODMAN, Philadelphia.
The American Board of Anesthesiology
RALPH M. WATERS, Madison, Wis.
*PAUL M. WOOD, New York.
The American Board of Plastic Surgery
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The American Board of Neurological Surgery
HOWARD NAFFZIGER, San Francisco.
*R. GLEN SPURLING, Louisville, Ky.

FOREWORD

The Advisory Board for Medical Specialties has prepared these data for the purpose of furnishing general information regarding its activities in connection with graduate medical education and the certification of medical specialists in the United States and Canada. It is designed also to give detailed information concerning the procedure to be followed by examining boards in the various specialties in order to obtain membership in this Advisory Board and official recognition by the Council on Medical Education and Hospitals of the American Medical Association. This information is based in large part on the experience of previously formed boards during the past twenty-five years.

ORGANIZATION

This Advisory Board was organized in 1933-1934 to coordinate graduate education and certification of medical specialties in the United States and Canada.

Several specialty boards had been functioning actively and successfully for a number of years prior to the organization of the Advisory Board for Medical Specialties. Their purposes were, primarily, to establish minimum standards of graduate educational and training requirements for physicians representing themselves to the public as being specialists, with certification by the boards of candidates after they had been able successfully to pass the boards' examinations. Secondly, these boards hoped to improve the general standards of graduate medical education and facilities for special training. This aim is being steadily and rapidly accomplished.

Credit for the improvement in undergraduate medical education, so noticeable in this country during the past twenty-five years, is due to the efforts of universities, educational foundations, medical schools, medical societies, and to public support along these lines. The same is true of the present transition in graduate education in the specialties, sharply stimulated by the establishment and activities of these certifying boards.

The American Board of Ophthalmology was the first special certifying board to be created in 1916; the American Board of Otolaryngology, established in 1924, was followed by the American Board of Obstetrics and Gynecology in 1930, and the American Board of Dermatology and Syphilology in 1932.

During part of this period of time plans for the organization of similar boards in other specialties were being actively projected, all of these groups being desirous of availing themselves of the experiences of the already existing boards.

It was soon recognized that some formal and official plan of organization must be established. It was clearly essential that an examining board must have the official sanction of the national societies in its given specialty as well as that of its section of the American Medical Association, but there was, at that time, nothing to prevent unofficial groups from organizing examining boards and using the title American Board.

Consequently, in order to avoid duplication of effort as well as to coordinate the work of the several boards and other interested groups into a concise and homogeneous plan for betterment, it was deemed advisable to create an Advisory Board which should give consideration to those problems common to all, and which should be representative of each organization concerned.

During the years 1933 and 1934 this Advisory Board was organized and began actively to function. Simultaneously at the Milwaukee session of the American Medical Association in 1933 a resolution was adopted authorizing the Council on Medical Education and Hospitals: (1) to formulate standards of administration based in general upon those of the American Boards of Ophthalmology, of Otolaryngology, of Obstetrics and Gynecology, and of Dermatology and Syphilology and, (2) to recognize officially new boards meeting these standards, this recognition to be based upon previous approval and recommendation to the Council by the Advisory Board.

A constitution and by-laws for the Advisory Board was adopted at a meeting in Chicago on February 11, 1934. The original member organizations of the Advisory Board for Medical Specialties were: the Association of American Medical Colleges; the American Hospital Association; the Federation of State Medical Boards of the U. S. A.; the National Board of Medical Examiners; the American Board of Ophthalmology, founded 1916; the American Board of Otolaryngology, founded 1924; the American Board of Obstetrics and Gynecology, founded 1930; and the American Board of Dermatology and Syphilology, founded 1932. Two representatives were appointed from each of these organizations to serve on the Advisory Board. Since that time the American Boards of Pediatrics (1934), of Psychiatry and Neurology (1934), of Radiology (1934), of Orthopaedic Surgery (1935), of Urology (1935), of Pathology (1936),

of Internal Medicine (1936), of Surgery (1937), of Anesthesiology (1938), of Plastic Surgery (1938), and of Neurological Surgery (1940) have been properly organized, approved, and elected to membership in the Advisory Board and recommended to the Council on Medical Education and Hospitals of the American Medical Association for official recognition. There are, therefore, fifteen examining boards now organized, approved and actively functioning in the fifteen specialties recognized as suitable fields for the certification of specialists.

The work of this board has been aided by grants from the Josiah Macy, Jr., Foundation of New York, but the board is now supported by its component groups.

PURPOSE

Article II of the Constitution states that, "This board shall act in an advisory capacity to such organizations as may seek its advice concerning the coordination of the education and certification of medical specialists." Specifically, this represents an official effort to advance the standards and improve the methods of graduate education and training in the medical specialties, with certification of men thus educated and trained who qualify as specialists in the various branches. The common interest of the member organizations in these purposes is obvious. It is equally apparent that some fixed definition of specialties needed to be established, preferably on a graduate educational basis, that minimum standards of organization and conduct for new examining boards should be fixed, and that some official method of recognition be developed.

There is no desire on the part of these boards to interfere with any practitioners of medicine in any of their regular or legitimate activities. Their fundamental purpose is to ensure to the public, both lay and medical, and for its protection, that physicians claiming to be specialists with presumably special proficiency in one or another branch of medicine actually possess the qualifications they claim. This presupposes special training and demonstrable capability along certain lines of work. Suitable evidence of this is the ability of an individual to satisfy an examining board about his training and then to pass the examination for certification.

Surveys of existing facilities for graduate training in the various specialties are being conducted at the present time; residencies as well as preceptorship and assistantship training are being studied; preparations for stimulating medical school and hospital facilities for the required graduate training are going forward actively; round table conferences furnish discussions of subjects of interest in regard to graduate medical education.

The Council on Medical Education and Hospitals of the American Medical Association has agreed, under the authority vested in it by the resolution passed at the Milwaukee meeting (1933) and referred to above, that applications of special examining boards for official approval are to be referred to the Council through the Advisory Board for Medical Specialties, recommendation by the Advisory Board for such approval to be based upon the standards mutually adopted. The understanding exists that the Council cannot be bound by recommendations of the Advisory Board but will consult the Advisory Board for Medical Specialties before acting upon any application so long as mutually adopted standards are in force.

Early in 1940 there was published the first edition of the Directory of Medical Specialists containing the names and biographic data of all men certified by the several specialty boards, as well as information regarding the organization and functions of these boards. In the next edition to be published early in 1942 will appear the names and brief biographic records, including hospital and teaching appointments, of about 18,000 diplomates or certified specialists.

In response to the generally recognized need for a clear formulation of the educational problems and principles involved in graduate and postgraduate medical training, the Advisory Board at its meeting in June 1937 voted to create a Commission on Graduate Medical Education to study the various aspects of the whole problem. This commission included representatives of the profession, the specialties, the universities, the hospitals, and the licensing bodies. The report of this commission comprising 304 pages appeared in 1940, published by the University of Chicago Press, and is of real assistance to the various specialty boards, hospitals, medical schools, and regulatory bodies dealing with this phase of American medicine.

MEMBERSHIP

The Advisory Board is composed of two representatives from each of the approved examining boards in the medical specialties and such other national organizations as are interested in education, examination, and certification of medical specialists and duly elected to this body.

The Constitution provides that, "To be eligible for representation in this board an examining board in a specialty must be composed of members elected from or appointed by societies recognized by this board as a national society in that specialty together with representation from the related section of the American Medical Association." Upon being accepted by the Advisory Board the board in question is recommended to the Council on Medical Education and Hospitals of the American Medical Association as qualified for recognition. Membership in the Advisory Board provides for the inclusion of the name of the organization in all lists and directories published by the Advisory Board for Medical Specialties and provides also for publication of the names of specialists certified by each individual examining board.

This board reports directly to its member groups, and functions in close cooperation with the Council on Medical Education and Hospitals of the American Medical Association, and with the Advisory Council on Medical Education.

The Advisory Board has voted that no more subsidiary boards be formed and that further special groups be provided for, so far as possible, with the boards of medicine and surgery.

Meetings of the Advisory Board for Medical Specialties are held annually as required.

Traveling and other expenses of representatives in attendance are borne by member organizations.

ESSENTIALS FOR APPROVED SPECIAL EXAMINING BOARDS

I. ORGANIZATION

1. A special examining board to be approved by the Advisory Board for Medical Specialties should represent a recognized and distinct specialty of medicine. (It is agreed between the Council and the Advisory Board that no board shall be organized in a special field having less than one hundred members engaged in special practice in the United States.)

2. It should be composed of representatives of the national organizations in that specialty including the related section of the American Medical Association.

3. It should be incorporated.

4. A special board should:

(a) Determine whether candidates have received adequate preparation.

(b) Provide a comprehensive test of the ability and fitness of such candidates.

(c) Certify to the competence of those physicians who have satisfied its requirements.

II. DEFINITION OF SPECIAL FIELDS

The following branches of medicine at present are recognized as suitable fields for the certification of specialists:

1. Internal Medicine
2. Surgery
3. Pediatrics
4. Obstetrics and Gynecology
5. Ophthalmology
6. Otolaryngology
7. Dermatology and Syphilology
8. Psychiatry and Neurology
9. Urology
10. Orthopaedic Surgery
11. Radiology
12. Pathology
13. Neurological Surgery
14. Anesthesiology
15. Plastic Surgery

III. QUALIFICATION OF CANDIDATES

Each applicant for admission to the examination should be required to present evidence that he has met the following standards:

A. General Qualifications.

1. Satisfactory moral and ethical standing in the profession.

2. Membership in the American Medical Association or membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association is recommended. Membership in other societies should not be required. (Exceptions to the foregoing may now be made at the discretion of any individual board for good and sufficient reasons.)

B. Professional Standing.

1. Graduation from a medical school recognized by the Council on Medical Education and Hospitals of the American Medical Association.

2. Completion of an internship, preferably of the general rotating type, of not less than one year in a hospital approved by the same Council.

C. Special Training.

(To be effective as far as practical not later than Jan. 1, 1944.)

1. A period of study, after the internship, of not less than three years in clinics, dispensaries, hospitals or laboratories recognized by the same Council as competent to provide a satisfactory training in the special field of study.

2. This period of specialized preparation should include:

(a) Graduate training in anatomy, physiology, pathology, and the other basic medical sciences which are necessary to the proper understanding of the specialty in question.

(b) An active experience of not less than eighteen months in hospital clinics, dispensaries and diagnostic laboratories recognized by the Council as competent in the specialty.

(c) Examinations in the basic medical sciences of a specialty as well as in the clinical, laboratory and public health aspects.

3. An additional period of not less than two years of study and/or practice.

These essentials were adopted by the Advisory Board for Medical Specialties June 10, 1934 and have had only minor changes since then. They are practically identical with an outline of Essentials for Approved Specialty Boards adopted June 10, 1934 by the Council on Medical Education and Hospitals of the American Medical Association and ratified June 11, 1934 by the House of Delegates of the American Medical Association.

ORGANIZATION OF EXAMINING BOARDS

The foregoing essentials for approved special examining boards were followed in the organization of the existing boards.

Official sponsorship of the national societies, and the related section of the American Medical Association, in a specialty organizing an examining board, has included the election or appointment of representatives from each of these national societies to serve on the board as examiners and directors.

Each board was or is incorporated. Each application for organization and approval included:

1. The name of the proposed board.
2. A statement of its method of organization, the sponsoring societies, its list of officers, and the names and addresses of the elected or appointed members of the board, including the societies which each represents.
3. A copy of the tentative constitution and by-laws.
4. A copy of its proposed articles of incorporation.
5. An outline of qualification requirements for applicants.
6. An outline of proposed methods of examination.
7. A copy of the application blank.
8. Any general information or statement of importance.
9. Approximate number of physicians practicing the specialty which the board represents.

These data are submitted in duplicate to the office of the Secretary of the Advisory Board for Medical Specialties. An application for election to membership in the Advisory Board and the data listed above are referred immediately for review by the Committee on Standards and Examinations of the Advisory Board. Upon approval by the committee incorporation is then completed and a statement of this filed with the secretary. Action on the application will be taken at the succeeding meeting of the Advisory Board for Medical Specialties and each examining board as elected will be recommended to the Council on Medical Education and Hospitals of the American Medical Association for official recognition. One of the two sets of data submitted is forwarded to the Council on Medical Education and Hospitals of the American Medical Association with the Advisory Board's recommendations. Examination and certification of applicants in the specialty may begin immediately when the special board is given such approval. Communications should be addressed to the secretary.

CONSTITUTION AND BY-LAWS

Adopted at Organization Meeting, February 11, 1934

ARTICLE I

NAME

The name of this organization shall be "The Advisory Board for Medical Specialties."

ARTICLE II

PURPOSE

This board shall act in an advisory capacity to such organizations as may seek its advice concerning the coordination of the education and certification of medical specialists. No action taken by this Board shall be binding upon any member organizations.

ARTICLE III

MEMBERSHIP

Section 1

This board shall be composed of two representatives from each of the examining boards of the medical specialties and such other national organizations as are interested in education, examination, or certification of medical specialists.

Section II—Original Membership

At the time of the organization, this board shall be composed of representatives from each of the following bodies:

- The American Board of Ophthalmology.
- The American Board of Otolaryngology
- The American Board of Obstetrics and Gynecology
- The American Board of Dermatology and Syphilology
- The Association of American Medical Colleges
- The National Board of Medical Examiners
- The Federation of State Medical Boards of the U. S. A.
- The American Hospital Association
- The Council on Medical Education and Hospitals of the American Medical Association

Section III—Additional Membership

To be eligible for representation in this board an examining board in a specialty must be composed of members elected from or appointed by societies recognized by this board as national societies in that specialty together with representation from the related Section of the American Medical Association. Upon being accepted by this Advisory Board the board in question will be recommended to the American Medical Association as being qualified for recognition by that Association.

Section IV—Quorum

A quorum at any meeting shall consist of a majority of the official representatives to the board and at least one-third of the membership organizations shall be represented. Each member organization shall be entitled to two votes.

ARTICLE IV

OFFICERS AND STANDING COMMITTEES

Section I—Officers

The officers of this board shall be (a) President, (b) Vice President, (c) Secretary-Treasurer. These officers shall be elected at the annual meeting each year.

Section II—Standing Committees

The standing committees shall be as follows:

1. The Executive Committee
2. Standards and Examinations
3. Finance

The Executive Committee shall consist of the President, Vice President, Secretary-Treasurer, and two members elected at the annual meetings. No organization should have more than one member on the Executive Committee. The President shall be the Chairman of the Executive Committee. The other standing committees shall be appointed by the President.

ARTICLE V

AMENDMENTS TO THE CONSTITUTION

Amendments to this constitution may be made by a majority vote of the official representatives present at any annual meeting provided that thirty days' notice of the proposed amendment has been given each member of the board.

BY-LAWS

ARTICLE I

DUTIES OF OFFICERS

Section I

The President shall preside at all meetings of the board, shall act as Chairman of the Executive Committee, and shall appoint all other standing committees. He shall call meetings of the Executive Committee at such time and place as may be deemed necessary.

Section II

The Vice President shall assume the duties of the President in his absence.

Section III

The Secretary-Treasurer shall perform the usual duties of this office.

ARTICLE II

EXECUTIVE COMMITTEE

The Executive Committee shall carry out the policies and activities decided upon by the board. It shall have an interim authority to initiate policies subject to approval by the board at the annual or any special meeting. The two elected members shall serve for two years, the terms of office terminating in alternate years.

ARTICLE III

MEETINGS

Section I

There shall be an annual meeting at such time and place as the board may determine. A special meeting may be called by the president upon ten days' notice to all members stating time, place and purpose of such meetings. The Executive Committee may present other business for consideration.

Section II

The Executive Committee shall meet subject to the call of the President.

Section III

Robert's Rules of Order shall be followed except where they conflict with this Constitution and By-Laws.

ARTICLE IV

AMENDMENTS TO THE BY-LAWS

Amendments to these by-laws may be made at any regular or special meeting of the board.

HOSPITALS APPROVED FOR TRAINING INTERNS

By the Council on Medical Education and Hospitals of the American Medical Association

The following general hospitals are considered in position to furnish acceptable internships of at least one year duration. They are also accredited for mixed residencies, which represent general assignments following an approved intern service.

The + sign indicates additional approval for residencies in specialties.

HOSPITALS, 735. INTERNSHIPS, 6,874

Capacity, 249,045 Beds

The terms used in the column "Type of Internship" are defined as follows:

1. A full rotating internship provides training in medicine, surgery, pediatrics, obstetrics, pathology and radiology. (X-ray and laboratory duties may be combined with clinical services or constitute separate assignments.)

2. A mixed or limited rotating internship covers more than one of the clinical specialties but does not include all of the divisions listed above.

3. A straight internship is an assignment limited to a single department but may include the subspecialties of the same branch. Straight internships are now approved in the divisions of medicine, surgery, pediatrics, pathology, obstetrics and obstetrics-gynecology.

ABBREVIATIONS

Army	United States Army	Indiv	Individual	Part	Partnership
CyCo	City and County	M	Mixed	Req	Required
Corp	Corporation unrestricted	NPAssn	Nonprofit association	S	Rotating
	as to profit	Op	Optional	USPHS	Straight
Fed	Federal				United States Public Health Service

Name of Hospital	Location	Control	Capacity	Total Patients Treated	% Service Cases	% Priv. Pts. Worked Up by Interns	Type of Internship	Interns Appointed Annually	Length of Service in Months	Service Commences	Amiliated Service	Outpatient Service	Autopsy Percentage	Stipend per Month	Appointments Made
ALABAMA															
Hillman Hospital +	Birmingham	County	478	11,233	100	..	R	10	24	July	No	Req	25	(c)	Nov
Norwood Hospital +	Birmingham	Church	226	5,007	95	80	R	4	12	July	No	Req	35	\$50	Nov
Employees' Hospital of the Tennessee Coal, Iron and Railroad Company +	Fairfield	NPAssn	306	7,327	100	..	R	12	12	July	No	Req	44	\$25	Nov
City Hospital	Mobile	CyCo	145	3,747	90	25	R	4	12	July	No	Req	67	\$25	Nov
ARIZONA															
Good Samaritan Hospital	Phoenix	Church	196	5,395	..	..	R	3	12	July	No	None	21	\$25	Nov
St. Joseph's Hospital	Phoenix	Church	225	9,074	..	..	R	6	12	July	No	None	26	\$30	Nov
ARKANSAS															
Baptist State Hospital +	Little Rock	Church	315	5,717	8	100	R	5	12	July	No	None	31	\$25	Nov
St. Vincent Infirmary	Little Rock	Church	233	4,710	11	15	R	5	12	June	No	None	24	\$25	Nov
University Hospital	Little Rock	State	224	3,976	100	..	R	10	12	July	No	Req	51	\$25	Nov
CALIFORNIA															
General Hospital of Fresno County +	Fresno	County	509	7,958	100	..	R	12	12	July	No	Req	37	\$25	Nov
Glendale Sanitarium and Hospital	Glendale	Church	212	3,925	37	100	R	5	12	July	No	Op	28	\$32.50(a)	Nov
Loma Linda Sanitarium and Hospital	Loma Linda	Church	124	3,025	50	50	R	4	12	July	No	Op	30	\$33(a)	Nov
California Hospital	Los Angeles	Church	293	8,545	..	95	R	13	12	JanJuly	(5)	Req	29	\$25	Nov
Cedars of Lebanon Hospital +	Los Angeles	NPAssn	298	8,313	19	75	R	10	12	July	(6)	Req	41	\$20	Nov
Hospital of the Good Samaritan	Los Angeles	Church	445	10,036	..	..	R	8	12	July	Yes	Req	30	\$25	Nov
Los Angeles County Hospital +	Los Angeles	County	4,011	48,002	100	..	R	63	24	July	No	Req	57	\$10	Nov
Presbyterian Hospital-Olmsted Memorial	Los Angeles	NPAssn	315	7,341	..	..	R	5	12	July	No	Op	32	\$25	Nov
Queen of Angels Hospital	Los Angeles	Church	389	9,253	..	100	R	10	12	July	No	Req	35	\$20	Nov
St. Vincent's Hospital +	Los Angeles	Church	300	9,292	..	..	R	6	12	July	(6)	None	40	\$40	Dec
Santa Fe Coast Lines Hospital	Los Angeles	NPAssn	190	3,382	..	..	R	6	12	July	(7)	Req	63	\$25	Dec
White Memorial Hospital +	Los Angeles	Church	215	7,317	56	100	R	16	12	July	No	Req	41	\$45(a)	Nov
United States Naval Hospital	Marine Island	Navy	459	5,616	100	..	..	..	12	June	No	Req	66	(b)	Varies
Highland-Alameda County Hospital +	Oakland	County	338	12,797	100	..	R	24	12	July	(8)	Op	58	\$20	Nov
Orange County General Hospital	Orange	County	352	3,529	100	..	R	10	12	July	No	Req	46	\$15-20	Nov
Collis P. and Howard Huntington Memorial Hospital +	Pasadena	NPAssn	229	5,958	..	..	R	6	12	JanJuly	(9)	Req	56	\$25	Nov
Sacramento	Sacramento	County	510	8,219	100	..	R	12	12	July	No	Req	42	\$35	Nov
San Bernard	San Bernardino	County	41	3,786	100	..	R	9	12	July	No	Req	40	\$25	Nov
San Diego County General Hospital +	San Diego	County	676	9,313	100	..	R	14	12	July	No	Req	56	\$20	Nov
United States Naval Hospital	San Diego	Navy	1,181	9,711	100	..	R	8	12	July	(10)	Req	78	(b)	Varies
Franklin Hospital	San Francisco	NPAssn	248	5,006	60	75	R	10	12	July	No	Req	40	\$25	Nov
French Hospital +	San Francisco	NPAssn	229	3,758	..	100	R	7	12	July	No	Req	48	\$25(d)	Nov
Hospital for Children +	San Francisco	NPAssn	232	4,775	21	90	R	10	12	July	No	Req	74	\$50 yr	Jan
Letterman General Hospital	San Francisco	Army	1,202	9,061	100	..	..	..	12	July	No	Req	86	\$63	Varies
Mary's Help Hospital +	San Francisco	Church	144	3,167	18	100	R	5	12	July	No	Req	37	\$25	Dec
Mount Zion Hospital +	San Francisco	NPAssn	187	3,980	26	98	R	12	12	June	No	Req	60	\$15	Nov
St. Luke's Hospital +	San Francisco	Church	220	5,334	13	100	R	5	12	July	No	Req	55	\$15	Nov
St. Mary's Hospital	San Francisco	Church	365	8,516	11	100	R	8	12	July	No	Req	29	\$25	Sept
San Francisco Hospital +	San Francisco	CyCo	1,334	16,555	100	..	R	52	12	July	(11)	Req	56	\$10	Nov
Southern Pacific General Hospital	San Francisco	NPAssn	400	5,661	100	..	R	16	12	July	(12)	Req	48	\$30	Oct
Stanford University Hospitals +	San Francisco	NPAssn	335	9,736	50	50	S	15	12	July	No	Req	53	No	Dec
United States Marine Hospital	San Francisco	USPHS	485	5,211	100	..	R	12	12	July	(13)	Op	70	\$62.50	Varies
University of California Hospital +	San Francisco	State	309	7,608	59	33	S	22	12	July	No	Req	67	\$50 yr	Dec
Santa Clara County Hospital +	San Jose	County	563	7,754	100	..	R	10	12	July	No	Req	21	\$20(d)	Nov
St. Francis Hospital	Santa Barbara	Church	105	1,979	9	99	R	3	12	July	No	Op	46	\$20	Feb
Santa Barbara	Santa Barbara	NPAssn	185	3,491	2	99	R	5	12	July	No	Op	77	\$20	Nov
Santa Barbara	Santa Barbara	County	312	4,467	100	..	R	7	12	June	No	Req	74	\$15	Nov
COLORADO															
Boulder-Colorado Sanit. and Hospital	Boulder	Church	107	1,185	75	100	R	2	12	Jan	(14)	Op	48	\$25	Nov
Beth-El General Hospital and Sanatorium	Colorado Springs	Church	176	2,051	..	60	R	3	12	July	No	None	40	\$25	Jan
St. Francis Hospital and Sanatorium	Colorado Springs	Church	150	1,431	..	20	R	2	12	July	No	None	41	\$25	Varies
Colorado General Hospital +	Denver	State	255	3,578	100	..	R	16	12	July	No	Req	81	\$20	Nov
Denver General Hospital +	Denver	Church	252	7,416	100	..	R	10	18	JanJuly	No	Req	41	\$20	Varies
Merey Hospital	Denver	Church	175	4,697	..	..	R	5	12	July	No	Req	31	\$25	Oct
Presbyterian Hospital	Denver	Church	210	3,715	..	..	R	5	12	July	No	Req	20	\$25	Varies
St. Anthony Hospital	Denver	Church	309	6,343	75	..	R	6	12	July	No	None	29	\$25	Feb
St. Joseph Hospital	Denver	Church	259	6,910	..	99	R	8	12	July	No	None	46	\$25	Varies
St. Luke's Hospital +	Denver	Church	259	6,910	..	99	R	8	12	July	No	None	46	\$25	Varies
CONNECTICUT															
Bridgeport Hospital	Bridgeport	NPAssn	400	9,463	41	..	R	10	12	July	No	None	27	\$10	Nov
St. Vincent's Hospital	Bridgeport	Church	225	6,563	25	100	R	9	12	July	No	Req	19	\$20	Nov
Danbury Hospital	Danbury	NPAssn	210	2,991	32	100	R	4	12	July	No	None	63	\$10	Nov
Hartford Hospital +	Hartford	NPAssn	773	17,514	49	100	R	15	21	July	No	None	57	No	Nov
Municipal Hospitals +	Hartford	City	340	4,467	100	..	R	6	24	July	No	Req	49	\$10	Nov

Name of Hospital	Location	Control	Capacity	Total Patients Treated	% Service Cases	% Priv. Pts. Worked Up by Interns	Type of Internship	Interns Appointed Annually	Length of Service in Months	Service Commences	Admitted Service	Outpatient Service	Autopsy Percentage	Stipend per Month	Appointments Made
CONNECTICUT—Continued															
St. Francis Hospital ²⁴	Hartford	Church	526	10,632	44	100	R	12	12	July	No	Req	22	\$10	Nov
Meriden Hospital	Meriden	NPAssn	140	3,256	38	62	R	4	12	July	No	None	45	\$15(e)	Mar
Middlesex Hospital	Middletown	NPAssn	167	3,164	51		R	3	12	July	No	None	28	\$20(f)	Jan
New Britain General Hospital	New Britain	NPAssn	263	5,572	44	80	R	6	12	July	No	Req	29	\$30	Nov
Grace Hospital ⁴	New Haven	NPAssn	270	6,034	37	90	R	6	24	July	No	Req	23	\$10	Sept
Hospital of St. Raphael	New Haven	Church	280	6,805	27	90	R	4	24	July	No	None	28	\$20	Nov
New Haven Hospital ^{1,24}	New Haven	NPAssn	571	10,265	63	91	M&S	25	12&24	JanJulySept	No	Req	59	No	Nov
Lawrence	New London	NPAssn	248	3,502	64		R	4	12	July	No	None	34	\$22.50	Dec
Norwalk	Norwalk	NPAssn	196	5,001	15	65	R	5	12	JanJuly	No	None	41	\$20	Nov
William T	Norwich	NPAssn	178	3,018	45	100	R	3	12	July	No	Req	39	\$25	Varies
Stamford Hospital	Stamford	NPAssn	263	5,179	34	100	R	6	18	JanJuly	No	Req	33	\$15	Dec
St. Mary's Hospital ²	Waterbury	Church	270	8,798	32	50	R	6	12	July	No	Req	34	\$25	Nov
Waterbury Hospital	Waterbury	NPAssn	355	6,798	33	100	R	8	12	JulyOct	No	Req	41	\$25	Nov
DELAWARE															
Delaware Hospital	Wilmington	NPAssn	238	4,548	39	50	R	8	12	July	No	Req	29	\$25	Nov
Memorial Hospital ⁴	Wilmington	NPAssn	244	4,540	57	95	R	6	12	July	No	Req	30	\$35	Nov
St. Francis Hospital ¹	Wilmington	Church	135	1,816	38	63	R	3	12	July	No	Req	47	\$25	Jan
Wilmington General Hospital	Wilmington	NPAssn	218	3,900	22	100	R	7	12	July	No	Req	41	\$15(h)	Mar
DISTRICT OF COLUMBIA															
Central Disp. and Emergency Hospital ⁴	Washington	NPAssn	280	6,772	27	100	M	13	12	June	No	Req	64	\$10	Nov
Freedmen's Hospital ^{1,24}	Washington	USPHS	450	5,438	97	65	R	16	12	JulyOct	No	Req	32	\$10	Nov
Gallinger Municipal Hospital ^{1,2}	Washington	City	1,446	15,881	100		R	30	12	July	No	Op	40	\$10	Dec
Garfield Memorial Hospital ^{1,24}	Washington	NPAssn	433	10,834			R	12	12	July	No	Req	59	\$10(f)	Nov
Georgetown University Hospital ²⁴	Washington	NPAssn	268	5,919	27	73	R	10	12&24	July	(15)	Req	44	\$10	Dec
George Washington University Hospital ^{1,24}	Washington	NPAssn	114	2,609	17	80	R	5	12	July	No	Req	44	\$15	Nov
Providence Hospital ²⁴	Washington	Church	300	7,926	38	100	R	6	24	July	(15)	Req	30	\$10	Nov
St. Elizabeths Hospital, Medical and Surgical Department ^{1,2}	Washington	USPHS	456	2,201	100		R	6	24	MarJulyNov	(16)	Req	66	(b)	Feb
Shiley Memorial Hospital ^{1,2}	Washington	Church	345	8,683			R	8	12	July	No	Req	43	\$20	Nov
United States Naval Hospital	Washington	Navy	205	2,177	100		R		12	July	No	None	70	(b)	Varies
Walter Reed General Hospital ^{1,24}	Washington	Army	1,421	8,467	100		R	15	12	July	No	Op	82	\$63	July
Washington Sanitarium and Hospital ¹	Washington	Church	210	3,455	73	67	R	4	12	July	No	Req	37	\$63(a)	Nov
FLORIDA															
Duval County Hospital ⁴	Jacksonville	County	240	4,280	100		R	6	12	July	No	Req	41	\$15	Nov
St. Luke's Hospital	Jacksonville	NPAssn	200	4,773	12	75	R	5	12	July	No	None	35	\$25	Nov
St. Vincent's Hospital	Jacksonville	Church	240	6,050	17	10	R	6	12	July	No	None	28	\$10	Nov
James M. Jackson Memorial Hospital ²⁴	Miami	City	500	14,531	60		R	15	12	July	No	Req	21	\$20	Nov
United States Naval Hospital	Pensacola	Navy	142	1,252	100		R	4	12	Varies	No	Req	54	(b)	Varies
GEORGIA															
Crawford W. Long Memorial Hospital ¹	Atlanta	NPAssn	188	6,443	2	100	R	6	12	July	No	None	23	\$40	Jan
Georgia Baptist Hospital	Atlanta	Church	184	6,463	25	15	R	7	12	July	(17)	None	24	\$45(c)	Nov
Grady Hospital ²⁴	Atlanta	City	732	21,077	100		R	24	12	July	No	Req	33	\$10	Nov
Piedmont Hospital ⁴	Atlanta	NPAssn	147	4,003		100	R	6	12	July	(17)	None	43	\$45(c)	Nov
St. Joseph's Infirmary ^{1,2}	Atlanta	Church	160	4,528	34	60	R	4	12	July	No	Req	26	\$35	Nov
University Hospital ^{1,2}	Augusta	City	395	8,495	42	100	R	14	12	July	No	Req	35	\$10	Nov
Columbus City Hospital ¹	Columbus	City	237	4,408	61	39	R	5	12	July	No	Req	21	\$20	Nov
Emory University Hospital ⁴	Emory University	NPAssn	269	6,495	18	100	R	10	12	July	No	Req	52	\$10	Jan
Macon Hospital	Macon	CyCo	228	5,469	81	31	R	7	12	July	No	Req	24	\$25	Dec
ILLINOIS															
St. Joseph's Hospital ¹	Alton	Church	135	3,860	8	65	M	1	12	July	No	None	17	\$50	Dec
Alexian Bros. Hospital (male patients only)	Chicago	Church	252	4,318	10	100	R	7	12	July	(16)	None	34	\$50	Varies
American Hospital ¹	Chicago	NPAssn	195	3,355	60	100	R	5	12	July	No	None	41	No	Jan
Augustana Hospital ⁴	Chicago	Church	300	5,527	15	25	M	8	18	JanJuly	No	None	35	No	Nov
Belmont Community Hospital	Chicago	NPAssn	125	2,411	2		R	4	12	July	No	None	28	\$50	Nov
Chicago Memorial Hospital	Chicago	NPAssn	108	2,655		100	R	5	12	July	No	Req	57	\$25	Jan
Columbus Hospital	Chicago	Church	172	3,749	16	100	R	4	12	July	No	None	77	\$25	Jan
Cook County Hospital ^{1,24}	Chicago	County	3,525	81,154	100		R	68	18	JanJuly	No	Req	20	No	Nov
Edgewater Hospital	Chicago	NPAssn	145	4,171			R	5	12	JanJuly	No	None	45	\$25	DecJune
Englewood Hospital	Chicago	NPAssn	126	3,607		40	R	6	12	JanJuly	No	None	35	\$25	DecJune
Evangelical Hospital ¹	Chicago	Church	240	7,357			R	6	12	July	No	None	22	\$25	Jan
Garfield Park Community Hospital	Chicago	NPAssn	182	4,407		100	R	6	12	July	No	None	21	\$25	Varies
Grant Hospital ⁴	Chicago	NPAssn	261	6,572	8	100	R	9	12	July	No	Req	31	No	Nov
Henrotin Hospital ¹	Chicago	NPAssn	120	2,859	50	98	R	4	12	JanJuly	No	None	57	\$25	JanJuly
Holy Cross Hospital	Chicago	Church	157	4,033			R	5	12	July	No	None	48	\$25	Varies
Hospital of St. Anthony de Padua	Chicago	Church	232	5,593		100	R	0	18	JanJuly	No	None	18	\$25	Varies
Illinois Central Hospital	Chicago	NPAssn	290	4,920	69	100	M	9	12	Quarterly	No	Req	35	No	Quarterly
Illinois Masonic Hospital ¹	Chicago	NPAssn	184	4,410	25	75	R	6	12	JanJuly	No	Req	57	No	Varies
Jackson Park Hospital	Chicago	Corp	222	3,723		100	R	6	12	July	No	None	44	\$10	Jan
Loretto Hospital ¹	Chicago	Church	132	3,490		86	R	6	12	July	No	None	35	\$25	Varies
Lutheran Deaconess Home and Hospital	Chicago	Church	218	5,112	18	14	R	6	12	July	No	None	38	\$15	Nov
Mercy Hospital-Loyola University Clinics ⁴	Chicago	Church	311	6,591	22	78	R	10	12	July	No	Req	43	No	Nov
Michael Reese Hospital ⁴	Chicago	NPAssn	695	17,629	30		R	25	12-24	JanJuly	(19)	Req	69	No	Nov
Mother Cabrini Memorial Hospital	Chicago	Church	140	3,358	29	29	R	4	12	July	No	None	24	\$25	Nov
Mount Sinai Hospital ^{1,2}	Chicago	NPAssn	220	6,157	27	100	R	10	12	June	No	Op	51	No	Nov
Norwegian-American Hospital ^{1,2}	Chicago	NPAssn	182	4,506	1	99	R	6	12	July	No	None	42	\$25	Nov
Passavant Memorial Hospital ^{1,24}	Chicago	NPAssn	225	5,237			R	9	12	JanJulyOct	No	Req	70	No	Giandry
Presbyterian Hospital ^{1,2}	Chicago	Church	412	11,617		100	M&S	19	12-20	(6)	No	Op	64	No	(6)
Provident Hospital ^{1,2}	Chicago	NPAssn	165	3,559	63	100	R	8	12	July	No	Req	47	\$10	Nov
Ravenswood Hospital	Chicago	NPAssn	205	5,333			R	6	12	July	No	None	23	\$25	Jan
Research and Educational Hospital ^{1,24}	Chicago	State	467	5,475	100		R	14	12-15	JanJuly	No	Op	57	No	Oct
St. Anne's Hospital	Chicago	Church	223	7,015		95	R	7	12	June	No	None	19	\$40	Varies
St. Bernard's Hospital	Chicago	Church	262	7,401			R	6	12	July	No	None	23	\$25	July
St. Elizabeth Hospital	Chicago	Church	270	4,342	20	160	R	8	12	July	No	Req	40	No	Nov
St. Joseph Hospital ⁴	Chicago	NPAssn	522	12,138	15	100	R	18	24	July	No	Req	71	No	Nov
St. Luke's Hospital ²⁴	Chicago	Church	284	7,791	4		R	8	12	JanJuly	No	None	25	\$20	Varies
St. Mary of Nazareth Hospital	Chicago	Corp	129	3,256			R	4	12	JanJuly	No	None	21	\$20	Jan
South End Hospital	Chicago	Corp	159	2,423			R	4	12	JanJuly	No	None	29	\$40(f)	Oct
South Shore Hospital	Chicago	Church	217	5,045			R	8	12	July	No	None	37	\$25	Dec
Swedish Covenant Hospital ¹	Chicago	USPHS	391	2,759	100		R	6	12	July	(29)	Op	25	\$62.50	Varies
United States Marine Hospital ²	Chicago	NPAssn	121	5,575	24	160	R	4	12	July	No	None	23	\$15	July
University Hospital	Chicago	NPAssn	653	10,544		100	S	48	12	JanJuly	No	Req	79	No	NovJuly
University of Chicago Clinics ^{1,24}	Chicago	Church	211	4,473	5		R	6	12	July	No	None	29	\$25	Varies
Walther Memorial Hospital ¹	Chicago	Church	211	4,473	5		R	6	12	July	No	None	29	\$25	Varies

Name of Hospital	Location	Control	Capacity	Total Patients Treated	% Service Cases	% Priv. Pts. Worked Up by Interns	Type of Internship	Interns Appointed Annually	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Stipend per Month	Appointments Made
ILLINOIS—Continued															
Washington Boulevard Hospital.....	Chicago.....	NPAssn	108	1,994	..	100	R	2	18	Quarterly	No	None	50	No	July
Wesley Memorial Hospital ^{1,4}	Chicago.....	Church	173	3,260	32	63	R	6	12	JanJuly	No	None	72	No	Varies
Women and Children's Hospital ²	Chicago.....	NPAssn	125	2,764	46	54	R	4	12	JanJuly	No	Req	50	No	Nov
Woodlawn Hospital ¹	Chicago.....	NPAssn	147	3,156	..	..	R	4	12	JanJuly	No	None	62	\$25	NovFeb
St. Mary's Hospital ¹	East St. Louis.....	Church	276	4,781	..	100	R	6	12	July	No	None	39	\$25	Nov
Evanston Hospital ⁺	Evanston.....	NPAssn	260	8,291	13	100	R	12	16	(g)	No	Req	79	No	SprFall
St. Francis Hospital ⁺	Evanston.....	Church	312	6,263	..	100	R	9	12	July	No	None	47	\$20(1)	Nov
Little Company of Mary Hospital ^{1,4}	Evergreen Park.....	Church	235	6,199	..	..	R	7	12	July	No	None	26	\$25	Jan
United States Naval Hospital.....	Great Lakes.....	Navy	250	3,892	100	..	R	6	12	Varies	Req	..	(b)	Varies	
Moline Public Hospital ¹	Moline.....	City	200	4,737	..	100	R	3	12	JanJuly	No	None	26	\$25(1)	JanJuly
Oak Park Hospital ¹	Oak Park.....	Church	170	4,811	..	..	R	6	12	July	No	None	28	\$35	Nov
West Suburban Hospital.....	Oak Park.....	NPAssn	412	8,399	..	..	R	12	12-15	AprJulyOct	No	Req	34	No	Varies
Methodist Hospital of Central Illinois ⁺	Peoria.....	Church	240	5,510	..	..	R	8	12	July	No	None	42	\$25	Nov
St. Francis Hospital ^{1,4}	Peoria.....	Church	411	10,820	..	..	R	10	12	July	No	None	29	\$25	Nov
St. Mary's Hospital.....	Quincy.....	Church	215	4,177	60	30	R	3	12	July	No	None	26	\$25	Nov
St. Anthony's Hospital.....	Rockford.....	Church	239	5,090	..	100	R	4	12	JanJuly	No	None	30	\$75	Nov
INDIANA															
St. Catherine's Hospital.....	East Chicago.....	Church	312	6,094	..	..	R	7	12	July	No	None	29	\$25	Nov
Lutheran Hospital.....	Fort Wayne.....	Church	100	3,725	..	..	R	3	12	July	No	None	20	\$25(1)	Jan
St. Joseph Hospital.....	Fort Wayne.....	Church	300	4,995	..	..	R	5	12	July	No	None	19	\$50	Nov
Methodist Hospital ¹	Gary.....	Church	125	3,967	..	100	R	3	12	July	No	None	22	\$30	Mar
St. Mary's Mercy Hospital.....	Gary.....	Church	260	6,446	..	93	R	8	12	June	No	None	32	\$25	Nov
St. Margaret Hospital.....	Hammond.....	Church	263	5,883	..	..	R	10	12	July	No	None	23	\$30	Oet
Indianapolis City Hospital ^{1,3,4}	Indianapolis.....	City	724	11,530	98	100	R	28	24	July	No	Req	56	\$14.25	Nov
Indiana University Medical Center ^{1,3,4}	Indianapolis.....	State	604	9,339	85	100	R	27	12	July	No	Req	52	\$12.50	Nov
Methodist Hospital ⁺	Indianapolis.....	Church	578	17,035	5	100	R	23	12	July	No	None	24	\$10	Dec
St. Vincent's Hospital.....	Indianapolis.....	Church	335	7,192	..	..	R	6	12	July	No	None	16	\$25	Dec
Bali Memorial Hospital ⁺	Muncie.....	NPAssn	242	4,578	..	..	R	6	12	July	No	None	46	\$30	Nov
Epworth Hospital ^{1,4}	South Bend.....	NPAssn	192	4,826	5	82	R	4	12	July	No	Req	35	\$50	Nov
St. Joseph's Hospital ¹	South Bend.....	Church	147	3,479	15	100	R	3	12	July	No	Req	37	\$25(1)	Dec
St. Anthony's Hospital ¹	Terre Haute.....	Church	199	3,581	..	..	R	3	12	July	No	None	19	\$30	Dec
IOWA															
Mersey Hospital.....	Cedar Rapids.....	Church	175	2,916	..	..	R	3	12	July	No	None	18	\$25	Jun
Jennie Edmundson Memorial Hospital ¹	Council Bluffs.....	NPAssn	135	2,299	30	100	R	4	12	July	No	None	16	\$50	Nov
Mersey Hospital.....	Davenport.....	Church	165	3,578	..	100	R	3	12	July	No	None	17	\$25	Mar
Broadlawn, Polk County Public Hospital ¹	Des Moines.....	County	118	4,712	100	..	R	10	12	July	(21)	Req	56	\$25(1)	Jun
Iowa Lutheran Hospital ¹	Des Moines.....	Church	145	3,534	4	160	R	4	12	July	(21)	Req	18	\$35(m)	Nov
Iowa Methodist Hospital ¹	Des Moines.....	Church	279	7,451	..	..	R	8	12	July	No	Op	79	\$30(o)	Full
Mersey Hospital ¹	Des Moines.....	Church	190	4,123	..	..	R	5	12	July	(21)	Req	19	\$25	Jan
University Hospitals ^{1,3,4}	Iowa City.....	State	934	18,551	95	5	R	20	12	July	No	Req	55	\$100yr	Nov
St. Joseph Mercy Hospital.....	Sioux City.....	Church	220	5,263	..	..	R	5	12	July	No	Req	33	\$25	Dec
KANSAS															
Providence Hospital.....	Kansas City.....	Church	120	2,664	..	100	R	2	12	July	No	None	61	\$35	Jan
St. Margaret's Hospital.....	Kansas City.....	Church	251	4,126	..	100	R	6	12	July	No	None	74	\$25	Nov
University of Kansas Hospitals ^{1,4}	Kansas City.....	State	350	6,015	66	..	R	12	12	June	(22)	Req	68	\$15	Full
St. Francis Hospital ^{1,4}	Wichita.....	Church	300	6,425	..	..	R	7	12	July	(23)	Req	47	\$10	Nov
Wesley Hospital ¹	Wichita.....	Church	261	4,725	..	..	R	7	12	July	(24)	Req	24	\$10(n)	Nov
Wichita Hospital ¹	Wichita.....	Church	120	2,706	2	..	R	4	12	July	(23)	None	32	\$10	Dec
KENTUCKY															
St. Elizabeth Hospital.....	Covington.....	Church	316	4,812	38	..	R	0	12	July	No	Req	32	\$25	Nov
Good Samaritan Hospital.....	Lexington.....	Church	283	7,418	50	50	R	6	12	July	No	None	41	\$25	Dec
St. Joseph Hospital ⁺	Lexington.....	Church	239	5,483	36	95	R	5	12	July	No	Req	43	\$25	Nov
Kentucky Baptist Hospital.....	Lexington.....	Church	150	4,254	..	100	R	5	12	July	(25)	None	40	\$25	Oet
Louisville City Hospital ^{1,3,4}	Louisville.....	City	556	12,422	100	..	R	18	12	July	(26)	Req	40	\$6.25	Nov
Norton Memorial Pharmacy.....	Louisville.....	NPAssn	167	3,587	6	94	R	6	12	July	No	Req	29	\$20	Nov
St. Anthony's Hospital.....	Louisville.....	Church	167	2,583	..	..	R	4	12	July	(25)	None	17	\$20-\$34	Jan
St. Joseph Infirmary ⁺	Louisville.....	Church	325	6,387	10	100	R	8	12	July	(25)	None	20	\$15(n)	Nov
SS. Mary and Elizabeth Hospital.....	Louisville.....	Church	180	3,739	..	..	R	3	12	July	No	None	23	\$10	Jan
LOUISIANA															
Charity Hospital ^{1,3,4}	New Orleans.....	State	3,133	57,594	100	..	R	155	12	July	No	Req	47	\$10	Nov
Hotel Dieu, Sisters' Hospital.....	New Orleans.....	Church	283	9,820	..	..	R	10	12	July	No	None	23	\$50	Nov
Mersey Hospital-Soniat Memorial.....	New Orleans.....	Church	142	3,815	..	..	R	4	12	July	No	Req	32	\$20	Nov
Southern Baptist Hospital ⁺	New Orleans.....	Church	364	14,757	14	80	R	14	12	July	No	None	28	\$50(1)	Nov
Touro Infirmary ^{1,4}	New Orleans.....	NPAssn	440	11,518	35	100	R	22	12	July	No	Req	71	\$10	Nov
United States Marine Hospital ²	New Orleans.....	USPHS	572	5,412	100	..	R	12	12	July	(27)	Req	35	\$62.50	Varies
Highland Sanitarium.....	Shreveport.....	Corp	116	3,221	..	..	R	3	12	July	No	None	29	\$50	Jun
North Louisiana Sanitarium.....	Shreveport.....	Corp	110	2,856	2	100	R	3	12	July	(28)	Req	45	\$50	Dec
T. R. Schumpert Memorial Sanitarium.....	Shreveport.....	Church	114	3,321	..	..	R	2	12	July	No	None	16	\$50	Dec
Shreveport Charity Hospital.....	Shreveport.....	State	849	23,294	100	..	R	30	12	July	No	None	36	\$10	Nov
Tri-State Hospital.....	Shreveport.....	Corp	119	4,207	..	75	R	3	12	July	No	None	41	\$50	Sept
MAINE															
Eastern Maine General Hospital ¹	Bangor.....	NPAssn	243	4,351	31	..	R	5	12	July	No	Req	27	\$20	Nov
Central Maine General Hospital ¹	Lewiston.....	NPAssn	231	4,023	63	100	R	6	12	July	No	Req	41	\$20	Jun
St. Mary's General Hospital ¹	Lewiston.....	Church	165	2,210	45	25	R	4	12	July	No	None	26	\$20	Nov
Maine General Hospital.....	Portland.....	NPAssn	261	6,639	..	..	R	6	18	JanJuly	No	Req	37	No	Nov
MARYLAND															
United States Naval Hospital.....	Annapolis.....	Navy	192	1,576	100	..	R	..	12	July	(29)	None	62	(1)	Varies
Baltimore City Hospitals ^{1,3,4}	Baltimore.....	City	1,439	8,260	100	..	RMS	44	12	July	No	Req	47	No	Nov
Hon Secours Hospital ⁺	Baltimore.....	Church	175	3,832	24	100	P	4	12	July	No	Req	25	\$15	Nov
Church Home and Infirmary ^{1,4}	Baltimore.....	Church	178	3,388	30	100	R&S	7	12	July	No	Req	51	\$15	Nov
Franklin Square Hospital ⁺	Baltimore.....	NPAssn	227	2,772	50	100	R	6	12	July	No	Req	28	\$10(1)	Dec
Hospital for Women ^{1,4}	Baltimore.....	NPAssn	162	2,651	35	100	R	5	12	July	No	Req	22	No	Nov
Johns Hopkins Hospital ^{1,3,4}	Baltimore.....	NPAssn	972	16,141	74	100	R&S	70	12	JulySept	No	Req	73	No	Nov
Maryland General Hospital ^{3,4}	Baltimore.....	NPAssn	250	5,425	16	..	R	10	12	July	No	Req	22	\$10	Nov
Mersey Hospital ⁺	Baltimore.....	Church	326	7,532	41	..	R	10	12	July	No	Req	41	No	Nov
Provident Hospital and Free Dispensary ⁺	Baltimore.....	NPAssn	148	3,520	61	75	M	7	12	JulyOct	No	Req	17	\$10	Jan
St. Joseph's Hospital ⁺	Baltimore.....	Church	231	6,150	35	100	R	8	12	July	No	Req	25	\$5	Nov
Sinai Hospital ⁺	Baltimore.....	NPAssn	300	5,408	35	100	R&S	6	12	July	No	Req	42	No	Nov
South Baltimore General Hospital ^{1,4}	Baltimore.....	NPAssn	170	3,445	..	100	R	6	12	July	No	Req	33	\$20	Nov
Union Memorial Hospital ⁺	Baltimore.....	NPAssn	352	6,506	14	100	R	16	12	July	No	Req	33	No	Nov
United States Marine Hospital ²	Baltimore.....	USPHS	531	5,397	100	..	M	12	12	July	(30)	Op	61	\$2.50	Dec
University Hospital ^{1,3,4}	Baltimore.....	State	485	9,007	40	100	R	12	24	July	(31)	Req	55	No	Nov
West Baltimore General Hospital ⁺	Baltimore.....	Corp	162	3,723	39	100	R	7	12	July	(32)	Req	42	\$15	Nov

Name of Hospital	Location	Control	Capacity	Total Patients Treated	% Service Cases	% Priv. Pts. Worked Up by Interns	Type of Internship	Interns Appointed Annually	Length of Service in Months	Service Commences	Admitted Service	Outpatient Service	Autopsy Percentage	Stipend per Month	Appointments Made
MASSACHUSETTS															
Beverly Hospital ⁺	Beverly	NPAssn	161	2,957	56	..	R	4	12	July-Sept	No	Req	85	No	Nov
Beth Israel Hospital ⁺	Boston	NPAssn	215	6,051	46	46	R	4	12-22	Varies	No	Req	48	No	Nov
Boston City Hospital ^{1,3,4}	Boston	City	2,600	44,875	100	..	R	6	12-23	Varies	No	Req	47	No	Jan
Carney Hospital ⁺	Boston	Church	210	4,624	..	03	S	6	10 & 24	Jan-May-Sept	No	Req	25	No	Jan
Faulkner Hospital	Boston	NPAssn	170	4,023	..	..	S	23	12	June-Oct	No	Req	62	No	Nov
Massachusetts General Hospital ^{1,3,4}	Boston	NPAssn	466	7,501	100	..	S	23	12-25	Varies	(85)	Req	63	No	Oet
Massachusetts Memorial Hospitals ^{1,3,4}	Boston	NPAssn	429	6,935	..	100	S	15	12-24	July	(33)	Req	76	No	Nov
New England Hospital for Women and Children ²	Boston	NPAssn	260	4,029	50	37	R	8	18	Jan-July	No	Req	37	No	Nov
Peter Bent Brigham Hospital ^{3,4}	Boston	NPAssn	247	5,348	..	..	S	18	12-29	(g)	(34)	Req	63	No	Nov
St. Elizabeth's Hospital	Boston	Church	302	5,034	21	78	R	4	21	Quarterly	No	Req	18	No	Varies
United States Marine Hospital	Boston	USPHS	336	2,076	100	..	R	6	12	July	No	Req	40	\$62.50	Jan
Brookton Hospital	Brookton	NPAssn	155	2,615	..	19	R	4	12	June-Aug	No	Req	47	\$10	July
Cambridge City Hospital	Cambridge	City	332	7,459	67	..	R	6	24	(g)	No	Req	24	No	Dec
Cambridge Hospital ⁺	Cambridge	NPAssn	273	5,043	33	5	R & S	5	12	Quarterly	(35)	Req	27	No	Nov
Chelsea Memorial Hospital	Chelsea	Corp	115	2,014	40	20	R	2	12	Jan-July	No	None	24	\$50	Jan
United States Naval Hospital	Chelsea	Navy	461	3,503	100	..	R	..	12	July	No	None	56	(b)	Varies
Union Hospital ¹	Fall River	NPAssn	181	2,908	45	90	R	3	12	June-July	No	Req	31	\$10	Apr
Burbank Hospital ¹	Fitchburg	Corp	236	3,690	51	..	R	4	12	July-Oct	No	Req	36	\$25	Nov
Haverhill Municipal Hospital (Hale)	Haverhill	City	193	4,786	48	..	R	2	12	July	No	None	26	\$10	Oet
Holyoke Hospital	Holyoke	NPAssn	150	2,657	34	66	R	3	12	July	No	Req	30	\$25	Jan
Providence Hospital	Holyoke	Church	290	3,336	15	83	R	4	12	Jan-July	No	None	22	\$25	Jan-July
Lawrence General Hospital	Lawrence	NPAssn	142	3,366	43	..	R	3	12	July	No	Req	36	\$10	Feb
Lowell General Hospital	Lowell	NPAssn	188	2,975	39	..	R	3	12	July-Oct	No	Req	30	\$25	Fall
St. John's Hospital	Lowell	Church	200	3,710	55	10	R	4	12	July	No	Req	34	\$10	Nov
St. Joseph's Hospital	Lowell	Church	133	2,898	50	..	R	3	12	July	No	Req	21	\$12	June
Lynn Hospital	Lynn	NPAssn	227	5,563	59	..	R	6	18	Jan-July	No	Req	38	\$25	Nov
St. Luke's Hospital	New Bedford	NPAssn	339	6,760	..	..	R	6	12	July	No	Req	33	No	Dec
Newton Hospital	Newton	NPAssn	304	5,375	52	..	R	6	12	June-Sept	No	Req	30	No	Nov
House of Mercy Hospital	Pittsfield	NPAssn	235	3,825	21	..	R	3	12	July	No	Req	27	\$40	March
St. Luke's Hospital	Pittsfield	Church	189	3,671	19	..	R	3	12	Jan-July	No	None	29	\$50	Nov
Quincy City Hospital	Quincy	City	300	7,444	32	63	R	6	18	Jan-July	(36)	None	35	\$25	Nov
Salem Hospital ³	Salem	NPAssn	166	5,202	48	..	R	6	12	Jan-July	(37)	Req	47	\$25	Nov
Mersey Hospital	Springfield	Church	365	6,399	40	90	R	6	12	June-July	No	None	19	\$25	Fall
Springfield Hospital	Springfield	NPAssn	265	6,270	40	75	R	6	24	July	(38)	Req	34	No	Nov
Wesson Memorial Hospital ¹	Springfield	NPAssn	126	2,723	49	10	R	3	18	Jan-July	(39)	None	24	\$25	Varies
Waltham Hospital	Waltham	NPAssn	218	2,701	60	55	R	4	12	July	No	Req	29	\$15(h)	Varies
Memorial Hospital ⁺	Worcester	NPAssn	215	5,852	..	100	R	10	20	July	No	Req	60	No	Nov
St. Vincent Hospital	Worcester	Church	267	4,777	30	05	R	6	12	July	No	None	24	\$20	Nov
Worcester City Hospital ^{3,4}	Worcester	City	540	10,321	86	90	R	0	24	July(p)	No	Req	34	No	Nov
Worcester Hahnemann Hospital	Worcester	NPAssn	140	2,234	13	100	R	3	12	July	No	None	62	\$35	Jan
MICHIGAN															
University Hospital ^{1,3,4}	Ann Arbor	State	1,365	16,525	100	..	R	35	12	July	No	Req	66	No	Nov
Lella Y. Post Montgomery Hospital	Battle Creek	Church	161	3,360	..	8	R	4	12	July	No	Req	30	\$50	Dec
Mersey Hospital ^{1,3}	Bay City	Church	140	4,953	..	100	R	3	12	July	No	None	25	\$20	Nov
City of Detroit	Detroit	City	650	18,826	100	..	R	20	12	July	(40)	Req	30	\$25	Nov
Evangelical	Detroit	Church	215	5,411	..	..	R	5	12	July	No	Req	20	\$20	Dec
Grace Hospital ^{1,3,4}	Detroit	NPAssn	682	13,464	30	100	R	26	12	July-Sept	(40)	Req	31	\$25	Nov
Harper Hospital ⁺	Detroit	NPAssn	685	17,677	11	100	R	35	12	July	(41)	Req	36	No	Nov
Henry Ford Hospital ^{3,4}	Detroit	NPAssn	600	12,800	95	100	R	25	12	Sept	No	Req	67	\$125(a)	Nov
Mount Carmel Mercy Hospital	Detroit	Church	385	7,409	..	..	R	10	12	July	No	Req	63	\$25	Nov
Providence Hospital ⁺	Detroit	Church	424	10,580	..	..	R	17	12	July	(42)	None	53	\$20	Nov
St. Joseph's Mercy Hospital	Detroit	Church	216	5,268	6	..	R	6	12	July	No	Req	35	\$35	Nov
St. Mary's	Detroit	Church	375	6,435	32	93	R	12	12	July	No	Req	27	\$20	Dec
United State	Detroit	USPHS	291	2,381	100	..	R	4	12	July	No	Req	66	\$62.50	Dec
Eloise Hosp	Eloise	County	607	0,024	100	..	R	24	12	July	(40)	Req	60	\$25	Dec
Seymour Hospital ^{1,4}	Flint	City	382	10,787	..	100	R	12	12	July	No	Req	34	\$20(l)	Nov
Hurley Hospital ⁺	Grand Rapids	NPAssn	154	3,888	19	100	R	5	12	July	No	None	63	\$20	Nov
Blodgett Memorial Hospital ^{1,4}	Grand Rapids	NPAssn	272	7,145	10	100	R	6	12	July	No	None	45	\$20	Nov
Butterworth Hospital ⁺	Grand Rapids	Church	255	6,298	16	90	R	6	12	July	No	Req	43	\$10-30	Fall
St. Mary's Hospital ⁺	Grand Rapids	Church	200	4,750	11	100	R	7	12	July	No	Req	18	\$25	Fall
Highland Park General Hospital ¹	Highland Park	City	156	5,613	..	..	R	4	12	July	No	Req	49	\$65.50	Fall
W. A. Foote Memorial Hospital ¹	Jackson	City	156	5,613	..	..	R	4	12	July	(43)	None	52	\$60	Oet
Mersey Hospital	Jackson	Church	150	2,944	..	100	R	3	12	July	(44)	None	50	\$60	Sept
Edward W.	Lansing	NPAssn	163	4,990	15	100	R	5	12	July	(45)	None	48	\$70	Jan
St. Lawrence	Lansing	Church	199	4,801	..	100	R	4	12	July	(46)	Req	58	\$25	Varies
Pontiac General Hospital ¹	Pontiac	City	134	3,775	..	100	R	4	12	July	(46)	Req	58	\$25	Varies
Saginaw General Hospital ³	Saginaw	NPAssn	162	3,559	..	100	R	3	12	July	No	None	29	\$45	Nov
St. Mary's Hospital	Saginaw	Church	192	4,689	..	80	R	4	12	July	No	None	20	\$50	Nov
MINNESOTA															
St. Luke's Hospital ⁺	Duluth	NPAssn	270	6,786	..	100	R	9	12	July	(47)	Req	63	\$20	Nov
St. Mary's Hospital	Duluth	Church	200	6,787	..	100	R	9	12	July	(47)	Req	58	\$20	Nov
Asbury Hospital ¹	Minneapolis	Church	138	3,978	..	..	R	6	12	July	No	None	34	\$25	Varies
Minneapolis General Hospital ^{1,3,4}	Minneapolis	City	671	12,234	100	..	R	24	18	Jan-July	No	Req	61	\$75.50	Mar/Oct
Northwestern Hospital	Minneapolis	NPAssn	120	4,330	..	..	R	9	12	July	No	None	50	\$25(f)	Jan-July
St. Barnabas Hospital ¹	Minneapolis	NPAssn	165	4,693	..	100	R	7	12	Jan-Apr-July	No	None	66	\$25(h)	Nov
St. Mary's Hospital ¹	Minneapolis	Church	260	6,660	..	100	R	4	12	July	No	None	46	\$15(h)	Sept
Swedish Hospital	Minneapolis	NPAssn	275	8,336	..	..	R	4	12	July	No	None	23	\$25	Fall
University Hospitals ^{1,3,4}	Minneapolis	State	475	8,785	83	100	S	26	12	July	No	Req	70	No	Nov
Acker Hospital ^{3,4}	St. Paul	CyCo	900	10,918	100	..	R	32	12	July	No	Req	69	No	Nov
Bethesda Hospital ¹	St. Paul	Church	166	4,962	..	..	R	6	12	July	(49)	None	42	\$25	Nov
Charles T. Miller Hospital	St. Paul	NPAssn	230	6,120	19	97	R	7	12	July	(49)	Req	47	\$25	Nov
St. Joseph's Hospital	St. Paul	Church	289	9,169	3	90	R	10	12	July	(49)	None	49	\$25	Dec
MISSOURI															
St. Louis County Hospital ^{3,4}	Clayton	County	210	3,926	08	..	R	6	12	July	No	Req	45	\$25	Nov
Kansas City General Hospital ^{3,4}	Kansas City	City	610	11,251	109	..	R	23	12	July	No	Req	78	\$40	Nov
Kansas City General Hospital No. 2 ¹	Kansas City	City	292	3,449	100	..	R	11	12	July	No	Req	22	\$17.50	May
Memorah Hospital	Kansas City	NPAssn	155	3,709	..	..	R	6	12	July	No	Req	21	\$25	Nov
Research Hospital	Kansas City	NPAssn	211	5,271	..	100	R	6	12	July	No	None	65	\$25	Nov
St. Joseph Hospital ⁺	Kansas City	Church	277	6,564	5	100	R	8	12	June	No	None	74	\$25	Nov
St. Luke's Hospital ⁺	Kansas City	Church	266	5,676	..	..	R	7	12	July	No	None	76	\$25	Nov
St. Mary's Hospital ⁺	Kansas City	Church	175	4,460	20	100	R	5	12	July	No	None	55	\$25(m)	Nov
Trinity Lutheran Hospital	Kansas City	Church	134	3,236	..	100	R	4	12	July	No	None	27	\$70	Jan
Missouri Methodist Hospital ¹	St. Joseph	Church	170	3,776	..	..	R	4	12	July	No	None	41	\$20	Nov
St. Joseph's Hospital	St. Joseph	Church	163	3,657	..	..	R	4	12	July	(50)	Req	64	No	Dec
Barnes Hospital ^{1,4}	St. Louis	Church	400	10,953	33	67	S	27	12 & 15	July-Dec	No	Req	31	\$15	Nov
De Paul Hospital	St. Louis	Church	255	5,804	23	100	R	9	12	July	No	None	21	\$45	Fall
Evangelical Deaconess Home and Hospital ¹	St. Louis	Church	269	6,325	..	..	R	9	12	July	No	None	21	\$45	Fall

Name of Hospital	Location	Control	Capacity	Total Patients Treated	% Service Cases	% Priv. Pts. Worked Up by Interns	Type of Internship	Interns Appointed Annually	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Stipend per Month	Appointments Made
MISSOURI—Continued															
Homer G. Phillips Hospital ^{1,4}	St. Louis	City	742	9,005	100	..	R	30	12	July	No	Req (51)	39	\$10(c)	Apr
Jewish Hospital ¹	St. Louis	NPassn	283	6,944	22	100	R	11	12	July	No	Req	35	\$15	Nov
Lutheran Hospital	St. Louis	Church	180	4,482	3	97	R	4	12	July	No	None	20	\$50	Jan
Missouri Baptist Hospital ¹	St. Louis	Church	430	6,083	..	..	R	3	12	July	No	None	29	\$25	Dec
St. Anthony's Hospital	St. Louis	Church	250	5,003	59	100	R	7	12	July	(52)	Op	35	\$25	Nov
St. John's Hospital	St. Louis	Church	319	6,593	..	..	R	11	12	July	(53)	Req	20	\$20	Nov
St. Louis City Hospital ^{1,3,4}	St. Louis	City	1,040	16,178	100	..	R	67	12	July	No	Req	48	\$10(c)	Nov
St. Luke's Hospital ¹	St. Louis	Church	206	5,075	17	100	R	9	12	July	(53)	Req	44	\$20	Nov
St. Mary's Group of Hospitals ¹	St. Louis	Church	731	11,435	13	100	R	23	12	July	(54)	Req	56	No	Nov
St. Mary's Infirmary	St. Louis	Church	150	1,314	..	100	R	3	12	July	No	None	43	\$25	Varies
MONTANA															
Murray Hospital	Butte	Corp	120	2,531	..	100	R	3	12	July	No	Req	33	\$75(j)	June
St. James Hospital	Butte	Church	180	3,023	23	..	R	3	12	July	No	Req	23	\$50	Jan
NEBRASKA															
Bryan Memorial Hospital ¹	Lincoln	Church	120	1,955	..	..	R	3	12	July	No	None	45	\$25	July
Lincoln General Hospital ¹	Lincoln	City	230	2,923	..	..	R	4	12	July	No	None	34	\$25	Nov
St. Elizabeth Hospital	Lincoln	Church	200	3,812	..	..	R	4	12	July	No	None	25	\$25	Nov
Bishop Clarkson Memorial Hospital ^{1,4}	Omaha	Church	150	3,411	..	..	R	4	12	June	No	None	38	\$25	Varies
Creighton Memorial St. Joseph's Hosp. ^{3,4}	Omaha	Church	411	8,386	11	100	R	6	24	July	No	Req	29	\$20(f)	Nov
Immanuel Deaconess Institute	Omaha	Church	152	3,440	..	..	R	4	12	June	No	None	39	\$25	Dec
Nebraska Methodist Episcopal Hospital	Omaha	Church	180	4,174	..	..	R	5	12	June	No	None	52	\$25(f)	Jan
St. Catherine's Hospital ¹	Omaha	Church	190	3,497	..	100	R	4	12	July	No	None	24	\$25	Dec
University of Nebraska Hospital ¹	Omaha	State	230	3,448	100	..	R	12	12	July	No	Req	86	\$25	Nov
NEW HAMPSHIRE															
Margaret Pillsbury General Hospital	Concord	NPassn	123	2,122	39	..	R	2	12	July	No	Req	43	\$10	Varies
Mary Hitchcock Memorial Hospital ¹	Haverhill	NPassn	196	4,636	55	100	R	4	24&30	Quarterly	No	None	78	\$3.33	Nov
United States Naval Hospital	Portsmouth	Navy	162	573	100	..	R	3	12	Varies	No	None	30	(b)	Varies
NEW JERSEY															
Atlantic City Hospital ¹	Atlantic City	NPassn	300	5,563	67	100	R	8	12	July	No	Req	34	\$25	Nov
Cooper Hospital ¹	Camden	NPassn	375	6,771	60	100	R	12	12	July	No	Req	42	\$10	Nov
West Jersey Homeopathic Hospital ^{1,4}	Camden	NPassn	330	5,216	78	100	R	8	12	July	No	Req	37	\$25	Oet
East Orange General Hospital	East Orange	NPassn	150	2,940	45	10	R	4	12	July	No	Req	33	\$25	Oet
Alexian Bros. Hospital (male patients only)	Elizabeth	Church	100	2,623	62	95	R	5	12	July	(55)	Req	33	\$50	March
Elizabeth General Hospital and Dispensary	Elizabeth	NPassn	259	6,314	38	100	R	5	24	July	No	Req	31	\$15	July
St. Elizabeth Hospital	Elizabeth	Church	202	4,343	37	41	R	7	12	July	No	Req	16	\$15	Nov
Englewood Hospital ^{1,3}	Englewood	NPassn	232	4,700	..	..	R	6	18	JanJuly	No	Req	19	\$20	JanJuly
Hackensack Hospital ¹	Hackensack	NPassn	202	8,918	56	100	R	6	24	July	No	Req	27	\$25	Fall
St. Mary's Hospital ¹	Hoboken	Church	400	6,035	72	25	R	0	12	July	No	Req	36	\$25	Nov
Christ Hospital ¹	Jersey City	Church	246	4,773	43	100	R	0	12	July	No	Req	46	\$25	Nov
Jersey City Hospital ^{1,3,4}	Jersey City	City	900	18,841	90	..	R	40	12-34	JanJuly	(50)	Req	18	No	Nov
St. Francis Hospital	Jersey City	Church	240	3,526	60	15	R	7	12	JanJuly	(56)	Req	15	\$25	Nov
Monmouth Memorial Hospital ¹	Long Branch	NPassn	211	5,025	62	100	R	0	18	JanJuly	(67)	Req	26	\$15	Dec
..	Montclair	NPassn	330	6,015	38	86	R	0	24	July	No	Req	31	\$15	JulyNov
..	Morristown	NPassn	155	3,224	54	50	R	5	12	June-Sept	No	Req	23	\$10	Nov
..	Mount Holly	NPassn	145	2,391	65	100	R	4	12	July	(58)	Req	62	\$50	April
..	Neptune	NPassn	189	4,326	67	95	R	6	12	July	No	Req	21	\$25	Nov
.. and Children ¹	Newark	Church	235	5,124	39	..	R	6	12	July	No	Req	35	\$25	Nov
Newark Beth Israel Hospital ^{3,4}	Newark	NPassn	455	10,637	39	100	R	12	18	JanJuly	No	Req	39	\$16	Sept
Newark City Hospital ^{1,4}	Newark	City	740	14,986	100	..	R	12	24	Quarterly	No	None	23	\$15-20	Sept
Newark Memorial Hospital	Newark	NPassn	165	2,659	39	75	R	4	12	July	No	Req	28	\$25	Spring
St. James Hospital ¹	Newark	Church	152	2,893	53	35	R	3	12	July	No	Op	16	\$10	Nov
St. Michael's Hospital	Newark	Church	350	6,044	36	..	R	7	12	JulySept	(56)	Req	20	\$25	Nov
St. Peter's General Hospital	New Brunswick	Church	242	4,044	40	..	R	5	12	July	No	Req	31	\$20	Nov
Orange Memorial Hospital	Orange	NPassn	429	7,328	31	..	R	8	12	July	No	Req	18	\$25	Nov
St. Mary's Hospital	Orange	Church	150	2,984	31	..	R	3	12	July	No	Req	30	\$25	Jan
Passaic General Hospital	Passaic	NPassn	225	4,115	42	..	R	4	12	July	No	Req	28	\$25	Nov
St. Mary's Hospital ¹	Passaic	Church	219	4,814	45	..	R	4	12	July	No	Req	30	\$25	Nov
Nathan and Miriam Barcott Memorial Hosp. ¹	Paterson	NPassn	145	3,147	48	..	R	5	12	JulySept	No	Req	45	\$15-20	Nov
Paterson General Hospital	Paterson	NPassn	328	7,000	..	..	R	4	24	July	No	Op	28	\$12.50(m)	Nov
St. Joseph's Hospital	Paterson	Church	433	6,240	55	..	R	5	24	July	No	Req	26	\$15-25	Sept
Perth Amboy	Perth Amboy	NPassn	199	4,543	35	100	R	4	12	JanJuly	No	None	18	\$50	AprOet
Muhlenberg	Plainfield	NPassn	305	6,017	42	100	R	4	24	July	No	Req	25	\$25-35	Nov
Holy Name Hospital	Tenafleet	Church	225	4,249	33	100	R	8	12	July	No	Req	40	\$25	Dec
Mercer Hospital	Trenton	Church	261	4,705	42	85	R	7	12	July	No	Req	22	\$25	Nov
St. Francis Hospital	Trenton	Church	323	5,687	38	100	R	7	12	July	No	Req	21	\$25	Oet
William Mc	Trenton	NPassn	157	2,636	48	90	R	4	12	July	No	Req	19	\$25	Jan
North Hudson	Weehawken	NPassn	191	3,276	75	100	R	7	12	JanJulySept	(56)	Req	31	\$25	Varies
NEW YORK															
Albany Hospital ^{1,3,4}	Albany	NPassn	656	11,610	43	100	R	27	12&24	July	No	Req	73	(n)	Nov
Memorial Hospital ¹	Albany	NPassn	136	2,752	27	..	R	5	12	JulySept	No	Req	32	\$25	Jan
St. Peter's Hospital	Albany	Church	155	3,780	23	5	R	5	12	July	(39)	Req	31	\$10	Nov
Biinghamton City Hospital ¹	Biinghamton	City	550	6,945	42	..	R	7	24	July	No	Req	28	\$25	Nov
Beth-El Hospital ¹	Brooklyn	NPassn	270	7,949	41	59	R	10	12&24	JanJuly	No	Req	26	No	Nov
Beth-Moses Hospital ¹	Brooklyn	NPassn	225	4,067	52	48	R	8	24	JanJuly	No	Req	21	\$15	Dec
Brooklyn Hospital ¹	Brooklyn	NPassn	410	7,349	56	100	R	10	24	July	No	Req	44	No	Oet
Bushwick Hospital	Brooklyn	NPassn	130	2,536	39	..	R	4	24	July	No	Req	38	\$18	Dec
Coney Island Hospital ^{1,3,4}	Brooklyn	City	409	7,833	100	..	R	11	24	July	No	Req	70	\$18	Sept
Cumberland Hospital ^{1,4}	Brooklyn	City	400	7,807	100	..	R&S	14	12&24	July	No	Op	56	\$18	Nov
Greenpoint Hospital ^{1,3,4}	Brooklyn	City	300	6,629	100	..	R	10	24	July	No	Req	34	\$18	Oet
Israel-Zion Hospital ^{1,4}	Brooklyn	NPassn	622	10,187	32	60	R	18	24	JanJuly	No	Req	23	No	Nov
Jewish Hospital ^{1,3,4}	Brooklyn	NPassn	661	12,725	43	100	R&S	26	12&21	JanJuly	(32)	Req	47	No	Nov
Kings County Hospital ^{1,4}	Brooklyn	City	2,400	57,696	100	..	RMS	63	12&24	July	No	Req	23	\$18	Oet
Long Island College Hospital ^{1,4}	Brooklyn	NPassn	464	8,225	53	..	R&S	21	12	July	(60)	Req	38	No	Jan
Methodist Hospital ¹	Brooklyn	Church	490	7,575	33	100	R	7	24	July	No	Req	41	No	Nov
Norwegian Lutheran Deaconesses' Home and Hospital ^{1,4}	Brooklyn	Church	200	4,682	70	100	R	8	12	July	No	Req	33	No	Nov
St. Catherine's Hospital	Brooklyn	Church	333	5,954	51	100	R	8	24	July	No	Req	30	No	Dec
St. John's Hospital ¹	Brooklyn	Church	234	5,657	60	75	R	4	36	July	No	Req	44	No	Nov
St. Mary's Hospital ¹	Brooklyn	Church	305	5,624	60	95	R	8	24	July	No	Req	34	No	Fall
St. Peter's Hospital	Brooklyn	Church	232	4,547	75	100	R	4	24	July	No	None	23	(r)	Nov
United States Naval Hospital	Brooklyn	Navy	620	4,457	100	..	R	12	12	July	No	Req	40	(b)	Varies
Unity Hospital	Brooklyn	NPassn	248	5,304	57	100	R	6	24	July	No	Req	40	\$15	Nov
Wyckoff Heights Hospital	Brooklyn	NPassn	199	4,145	45	100	R	6	18-21	JanJuly	No	Req	17	No	Varies
Buffalo General Hospital ^{1,3,4}	Buffalo	NPassn	475	11,390	48	52	R	15	12	July	No	Req	47	No	Nov
Buffalo Hospital of the Sisters of Charity	Buffalo	Church	232	4,356	21	79	R	14	12	July	(61)	Req	27	\$25	Sept

Name of Hospital	Location	Control	Capacity	Total Patients Treated	% Service Cases	% Priv. Pts. Worked Up by Interns	Type of Internship	Interns Appointed Annually	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Stipend per Month	Appointments Made	
NEW YORK—Continued																
Deaconess Hospital ⁺	Buffalo.....	NPAssn	238	5,372	..	..	R	6	12	July	No	Req 34	\$25	Dec	
Edward J. Meyer Memorial Hospital ^{1,2,3,4} (Buffalo City Hospital).....	Buffalo.....	City	1,063	9,872	100	..	R	15	12	July	(62)	Req 33	\$50(a)	Nov		
Mercy Hospital.....	Buffalo.....	Church	198	4,320	33	100	R	4	12	July	No	Req 21	\$30	Nov	Fail	
Millard Fillmore Hospital ⁺	Buffalo.....	NPAssn	327	7,756	9	100	R	7	12	July	(63)	Req 44	\$15	Nov		
Mary Imogene Bassett Hospital ^{1,2}	Cooperstown.....	NPAssn	105	2,011	..	..	R&S	6	12&24	June	No	None	\$2	Nov	
Arnold-Orden Memorial Hospital.....	Elmira.....	NPAssn	210	4,404	26	85	R	4	12	July	(64)	None	\$4	\$20(1)	Nov	
St. Joseph's Hospital.....	Elmira.....	Church	217	4,001	R	5	12	July	No	None	\$27	\$25	Jan	
Ideal Hospital.....	Endicott.....	City	146	2,488	R	3	12	July	No	None	\$7	\$20	Feb	
Flushing Hospital and Dispensary ⁴	Flushing.....	NPAssn	300	5,816	33	100	R	4	24	July	No	Req 33	\$25	Nov		
Meadowbrook Hospital ^{1,2}	Hempstead.....	County	268	5,550	99	..	R	7	24	July	No	Req 53	\$25	Oet		
Jamaica Hospital ¹	Jamaica.....	NPAssn	229	5,056	31	..	R	5	24	July	No	Req 32	\$15	Jan		
Mary Immaculate Hospital ^{2,3}	Jamaica.....	Church	316	6,530	48	..	R	8	24	July	No	Req 31	No	Nov		
Queens General Hospital ^{1,2,3,4}	Jamaica.....	City	696	13,961	100	..	R&M	19	24	July	No	Op 67	\$18	July		
Charles S. Wilson Memorial Hospital ^{2,3}	Johnson City.....	NPAssn	350	5,282	..	..	R	7	24	July	(65)	Req 45	\$35(e)	Dec	
Our Lady of Victory Hospital.....	Lackawanna.....	Church	174	3,044	17	100	R	4	12	July	(66)	Req 31	\$50	Nov		
St. John's Long Island City Hospital ²	Long Island City.....	Church	288	5,670	76	100	R	8	24	July	No	Req 46	\$15	Oet		
Nassau Hospital.....	Mineola.....	NPAssn	257	4,924	33	..	R	4	12	July	No	None	\$27	Nov		
Mount Vernon Hospital.....	Mount Vernon.....	NPAssn	260	4,554	35	..	R	3	24	July	No	Req 43	(s)	Nov		
New Rochelle Hospital ⁺	New Rochelle.....	NPAssn	303	5,908	33	..	R	8	12	July	No	Req 41	No	Nov		
Beekman Hospital ¹	New York.....	NPAssn	96	2,019	..	..	M	8	18	JanJuly	No	Req 57	\$30	Nov	
Bellevue Hospital ^{1,2,3,4}	New York.....	City	2,583	67,892	100	..	RMS	98	12-24	JanJuly	No	Req 33	\$18	DecJune		
Beth David Hospital.....	New York.....	NPAssn	200	3,893	57	100	R	6	24	JanJuly	No	Req 35	No	Nov		
Beth Israel Hospital ^{1,2,3,4}	New York.....	NPAssn	394	8,549	52	100	R	12	24	July	No	Req 33	\$15	Nov		
Bronx Hospital ^{1,2,3,4}	New York.....	NPAssn	409	8,674	45	..	R	8	24	Quarterly	No	Req 41	(f)	Dec		
Columbus Hospital.....	New York.....	Church	300	4,552	60	100	R	6	18	JanJuly	No	Req 22	No	July		
Flower and Fifth Avenue Hospitals ^{1,2,3,4}	New York.....	NPAssn	411	7,763	39	100	R	12	24	July	(67)	Req 26	No	Dec		
Fordham Hospital ^{2,3}	New York.....	City	609	12,675	100	..	R	24	12&24	MarJulyNov	No	Req 38	\$18	Dec		
French Hospital ⁺	New York.....	NPAssn	332	5,693	53	98	R	9	12&24	Quarterly	No	Op 36	No	Nov		
Gouverneur Hospital ²	New York.....	City	220	4,619	100	..	R	12	12&24	JanJuly	No	Req 20	\$18	Dec		
Harlem Hospital ^{1,2,3,4}	New York.....	City	763	20,350	100	..	R	24	24	JanJuly	No	Op 26	\$18	Varies		
Hospital for Joint Diseases ^{2,3}	New York.....	NPAssn	355	6,336	..	..	R	6	24	JanJuly	(68)	Req 47	\$15	Nov	
Jewish Memorial Hospital ²	New York.....	NPAssn	269	5,371	34	29	R	6	24	JanJuly	No	Req 52	(n)	Dec		
Knickerbocker Hospital ²	New York.....	NPAssn	223	3,631	60	..	R	8	24	JanJuly	No	Req 45	No	Nov		
Lebanon Hospital ¹	New York.....	NPAssn	154	2,380	93	8	M	4	24	AprOet	No	Req 29	\$15	Dec		
Lenox Hill Hospital ^{1,2,3,4}	New York.....	NPAssn	622	10,384	60	..	R	12	24	JanJuly	No	Req 58	\$40yr	Oet		
Lincoln Hospital ^{2,3}	New York.....	City	469	10,582	100	..	R	18	24	JanJuly	No	Op 31	\$18	Dec		
Metropolitan Hospital ^{1,2,3,4}	New York.....	City	1,111	12,050	100	..	R	21	24	July	No	Req 34	\$18	Oet		
Misericordia Hospital.....	New York.....	Church	263	4,651	21	100	R	4	24	JanJuly	No	Req 32	\$20	Varies		
Montefiore Hosp. for Chronic Diseases ^{1,2,3,4}	New York.....	NPAssn	714	1,787	..	..	M&S	11	12	JanJuly	No	Req 71	\$25	FallSpr	
Morrisania City Hospital ^{2,3}	New York.....	City	539	12,543	100	..	R	16	24	JanJuly	No	Req 31	\$18	Dec		
Mount Sinai Hospital ^{1,2,3,4}	New York.....	NPAssn	856	16,984	67	..	M	14	24	MarJulyNov	No	Op 48	(n)	Oet		
New York City Hospital ^{2,3}	New York.....	City	880	10,590	100	..	RMS	22	12&24	July	No	Req 42	\$18	Nov		
New York Hospital ^{1,2,3,4}	New York.....	NPAssn	1,058	16,412	..	..	S	42	12&24	JanJuly	(69)	Req 64	No	Nov	
New York Infirmary for Women and Children ^{2,3}	New York.....	NPAssn	165	3,436	50	90	R	5	12&24	JuneSept	No	Req 63	\$10	Nov		
New York Polytechnic Medical School and Hospital ^{2,3}	New York.....	NPAssn	408	7,812	..	..	R	4	24	Quarterly	No	Req 23	No	JanMaySept	
New York Post-Graduate Medical School and Hospital ^{2,3}	New York.....	NPAssn	415	9,139	47	100	M	6	12&24	Quarterly	No	Req 37	No	Oet		
Presbyterian and Sloane Hospitals ^{1,2,3,4}	New York.....	NPAssn	1,036	18,017	99	90	M&S	14	12-25	(t)	No	Req 49	No	Nov		
Roosevelt Hospital ^{2,3}	New York.....	NPAssn	597	7,309	76	..	S	14	30&36	JanJuly	No	Req 45	No	Varies		
St. Clare's Hospital ¹	New York.....	Church	208	5,407	60	100	M	4	24	JanJuly	No	Req 37	\$10	JanJuly		
St. Francis Hospital.....	New York.....	Church	370	6,214	78	100	M	5	30	Jan	No	None	\$22	No	Nov	
St. Luke's Hospital ^{2,3}	New York.....	NPAssn	522	8,515	88	..	M	8	12&24	JanJuly	No	Req 51	No	Nov		
St. Vincent's Hospital ⁺	New York.....	Church	465	9,254	80	..	R	14	30	JanJuly	No	Req 39	(n)	Nov		
Sydenham Hospital ⁺	New York.....	NPAssn	203	4,284	60	100	R&M	10	12&24	JanJuly	No	Req 53	No	Dec		
Welfare Hospital for Chronic Diseases ^{1,2,3,4}	New York.....	City	1,565	17,729	100	..	M	11	12	July	No	Req 47	\$18	Nov		
United Hospital.....	Port Chester.....	NPAssn	202	2,549	34	75	R	6	12	July	No	Req 18	\$30(f)	Nov		
Vassar Brothers Hospital.....	Poughkeepsie.....	NPAssn	250	5,171	42	..	R	5	12	July	No	Req 26	\$30(1)	Fail		
Genesee Hospital ⁺	Rochester.....	NPAssn	244	5,722	29	99	R	4	24	July	(70)	Req 49	No	Nov		
Highland Hospital.....	Rochester.....	NPAssn	249	4,633	25	45	R	5	24	July	No	Req 32	\$25	Nov		
Rochester General Hospital ⁺	Rochester.....	NPAssn	378	8,127	41	85	R	4	24	July	No	Req 61	\$15	Nov		
St. Mary's Hospital ⁺	Rochester.....	Church	257	5,350	..	..	R	8	12	July	No	Req 31	\$20	Dec	
Strong Memorial and Rochester Municipal Hospitals ^{1,2}	Rochester.....	NP-Cy	665	14,494	75	100	M&S	26	12&24	July	No	Req 73	No	Oet		
Ellis Hospital ¹	Schenectady.....	NPAssn	439	8,379	18	20	R	7	12	July	No	Op 34	\$15	Dec		
U. S. Marine Hospital ² (Staten Island).....	Stapleton.....	USPHS	1,024	8,329	160	..	R	12	12	July	(71)	Req 57	\$62.50	Dec		
St. Vincent's Hospital.....	Staten Island.....	Church	241	5,067	66	100	R	4	24	July	No	Req 20	\$5	Nov		
Staten Island Hospital.....	Staten Island.....	Corp	292	4,659	..	..	R	4	24	July	No	Req 24	\$15	Nov	
Crouse-Ingalls Hospital.....	Syracuse.....	NPAssn	240	6,291	32	..	R	4	12	July	No	None	\$1	\$25	Nov	
General Hospital ¹	Syracuse.....	NPAssn	110	2,927	32	..	R	4	12	July	No	Req 35	\$10	Feb		
Hospital of the Good Shepherd ^{1,2}	Syracuse.....	NPAssn	210	4,916	42	58	R	12	24	July	(72)	None	42	No	Nov	
St. Joseph Hospital.....	Syracuse.....	Church	240	6,430	33	25	R	4	24	July	No	None	17	No	Nov	
Syracuse Memorial Hospital ⁺	Syracuse.....	NPAssn	250	6,269	37	..	R	12	24	July	(72)	None	47	No	Nov	
Samaritan Hospital.....	Troy.....	NPAssn	193	3,821	19	95	R	7	12	JulySept	No	Req 51	\$25	FallSpr		
Troy Hospital.....	Troy.....	Church	294	4,145	..	..	R	7	12	July	(59)	Req 21	\$20	Nov	
Grasslands Hospital ^{1,2,3,4}	Valhalla.....	County	825	5,336	100	..	R	12	18	JanJuly	No	Req 61	\$10-20	Nov		
St. Agnes Hospital.....	White Plains.....	Church	177	3,419	32	68	R	5	12	July	No	Req 47	\$40	Nov		
Whi.....	White Plains.....	NPAssn	203	3,752	35	..	R	5	12	JanJuly	No	Req 54	\$50	MayNov		
St. ..	Yonkers.....	NPAssn	200	4,428	..	..	R	6	12	(u)	No	Op 43	\$50	July	
St. ..	Yonkers.....	Church	197	3,667	61	29	R	5	18	JanJuly	No	Req 31	\$25	Dec		
NORTH CAROLINA																
Charlotte Memorial Hospital.....	Charlotte.....	NPAssn	315	4,333	11	109	R	8	12	July	No	Req 46	\$10	Nov		
Duke Hospital ^{1,2,3,4}	Durham.....	NPAssn	501	11,800	71	80	S	52	12	JulySept	No	Req 69	No	NovDec		
Lincoln Hospital.....	Durham.....	NPAssn	106	1,792	65	50	R	4	12	July	No	Req 25	\$25	Nov		
Watts Hospital ⁺	Durham.....	NPAssn	225	4,977	25	100	R	7	12	July	No	Req 40	\$15	Feb		
Rex Hospital ¹	Raleigh.....	NPAssn	200	4,900	30	99	R	5	12	July	No	Req 21	\$25	Oet		
James Walker Memorial Hospital.....	Wilmington.....	NPAssn	197	5,733	40	50	R	6	12	July	No	Req 29	\$25(f)	Nov		
City Hospital ^{2,3}	Winston-Salem.....	City	355	8,729	25	95	R	12	12	July	No	Req 33	\$15(h)	Nov		
NORTH DAKOTA																
Trinity Hospital ⁺	Minot.....	Church	174													

Name of Hospital	Location	Control	Capacity	Total Patients Treated	% Service Cases	% Priv. Pts. Worked Up by Interns	Type of Internship	Interns Appointed Annually	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Stipend per Month	Appointments Made
OHIO—Continued															
Bethesda Hospital ¹	Cincinnati	Church	239	5,672	25	95	R	7	12	July	No	Req 24	25(1)	Dec	
Christ Hospital ⁺	Cincinnati	Church	378	8,468	18	95	R	12	15	June	(75)	Req 40	25	Nov	
Cincinnati General Hospital ^{1,2,3,4}	Cincinnati	City	965	10,348	100	..	R	40	15	July	(76)	Req 51	20	Nov	
Deaconess Hospital ⁺	Cincinnati	Church	175	4,385	10	100	R	6	12	July	(77)	None 27	25	Dec	
Good Samaritan Hospital ⁺	Cincinnati	Church	675	12,123	35	100	R&S	12	12&24	June	No	Req 32	15-25	Nov	
Jewish Hospital ^{1,2}	Cincinnati	NPAssn	300	5,762	15	100	R	6	12	July	(78)	Op 30	20	Dec	
St. Mary's Hospital ¹	Cincinnati	Church	224	4,494	55	15	R	6	12	July	No	None 30	25	Nov	
City Hospital ^{1,2,3}	Cleveland	City	1,552	12,452	100	..	R	36	12	July	No	Req 44	No	Nov	
Fairview Park Hospital ¹	Cleveland	Church	187	3,737	13	100	R	4	12	July	No	None 26	45(1)	Nov	
Lutheran Hospital ¹	Cleveland	Church	137	3,671	3	100	R	4	12	July	No	Req 35	10(1)	Nov	
Mount Sinai Hospital ^{1,2,3}	Cleveland	Church	270	8,044	23	100	R	6	24	July	No	Req 35	10	Nov	
St. Alexis Hospital ⁺	Cleveland	Church	220	5,903	30	100	R	8	12	July	(79)	Req 37	10	Nov	
St. John's Hospital ⁺	Cleveland	Church	226	7,164	14	..	R	7	12	July	No	None 35	22.50(v)	Nov	
St. Luke's Hospital ^{2,3}	Cleveland	Church	391	10,074	33	77	R&S	10	24	June	No	Req 42	(w)	Nov	
St. Vincent Charity Hospital ⁺	Cleveland	Church	295	7,190	23	100	R	12	12	July	(79)	Req 36	No	Nov	
University Hospitals ^{1,2,3}	Cleveland	NPAssn	685	18,902	44	100	R&S	25	12-24	Feb-June-Oct	No	Req 66	(x)	Nov	
Woman's Hospital ¹	Cleveland	NPAssn	100	3,669	4	90	R	3	12	July	No	None 39	25	Dec	
Mount Carmel Hospital ¹	Columbus	Church	225	5,804	4	..	R	3	12	July	(80)	None 28	25	Jan	
St. Francis Hospital ⁺	Columbus	State	169	2,818	80	100	R	8	12	July	(81)	None 45	125yr	Nov	
Starling-Loving University Hospital ^{1,2}	Columbus	State	296	6,491	71	..	S	12	12	July	(82)	Req 62	50yr	Oct	
White Cross Hospital ¹	Columbus	Church	299	7,092	15	65	R	6	12	July	No	None 41	25	Dec	
Good Samaritan Hospital ¹	Dayton	Church	275	6,099	40	20	R	4	12	July	No	None 25	25	Dec	
Miami Valley Hospital ⁺	Dayton	NPAssn	400	10,317	77	..	R	0	12	July	(83)	None 33	25	Nov	
St. Elizabeth Hospital ¹	Dayton	Church	365	7,039	45	55	R	6	12	July	No	None 27	25	Nov	
Turron Road Hospital ^{1,2}	East Cleveland	NPAssn	327	8,045	5	100	R	10	12	July	No	Req 43	20	Nov	
Mersey Hospital	Hamilton	Church	220	3,547	..	100	R	3	12	July	No	Req 37	25	Nov	
Lima Memorial Hospital ¹	Lima	NPAssn	145	3,376	3	100	R	4	12	July	No	None 33	50	Varies	
St. Rita's Hospital ¹	Lima	Church	116	2,816	4	100	R	3	12	July	No	None 30	65	Feb	
Springfield City Hospital ¹	Springfield	City	295	5,058	29	100	R	8	12	July	No	Req 31	30	Nov	
Flower Hospital ¹	Toledo	Church	166	3,218	5	60	R	3	12	July	No	None 26	25	March	
Lucas County General Hospital ⁺	Toledo	County	325	4,584	160	..	R	12	12	July	No	Req 46	25	Nov	
Mersey Hospital ¹	Toledo	Church	145	3,217	..	65	R	3	12	July	No	None 31	35	Varies	
St. Vincent's Hospital ^{1,2}	Toledo	Church	354	7,956	17	83	R	10	12	July	No	Req 33	25	Nov	
Toledo Hospital ¹	Toledo	NPAssn	320	5,893	8	..	R	8	12	July	No	Req 41	25	Jan	
Women's and Children's Hospital ¹	Toledo	NPAssn	142	2,491	9	100	R	3	12	July	No	None 24	25	Nov	
St. Elizabeth's Hospital ⁺	Youngstown	Church	285	8,731	10	..	R	6	12	July	No	Req 24	30(1)	Oct	
Youngstown Hospital ^{2,3}	Youngstown	NPAssn	515	12,203	15	100	R	8	24	July	No	Req 32	(y)	Nov	
OKLAHOMA															
St. Anthony Hospital ⁺	Oklahoma City	Church	400	10,471	17	82	R	10	12	July	No	None 19	25	Nov	
University Hospitals ^{2,3}	Oklahoma City	State	466	5,420	98	..	R	11	24	July	(84)	Req 56	10-25	Nov	
Wesley Hospital ¹	Oklahoma City	Part	160	4,369	10	93	R	3	12	July	No	None 30	25	July	
St. John's Hospital ¹	Tulsa	Church	250	7,104	30	40	R	6	12	July-Oct	No	None 22	25	Varies	
OREGON															
Rmanuel Hospital ^{1,2}	Portland	Church	328	7,562	3	98	R	11	12	June	(86)	None 49	20	Nov	
Good Samaritan Hospital ¹	Portland	Church	346	8,462	5	90	R	10	12	July	No	None 44	20	Nov	
Portland Sanitarium and Hospital ¹	Portland	Church	147	5,364	..	100	R	4	12	June	No	None 51	30	Oct	
St. Vincent's Hospital ⁺	Portland	Church	422	9,349	..	..	R	10	12	June	No	None 50	25	Nov	
University of Oregon Medical School Hospitals and Clinic ^{2,3}	Portland	CoState	465	8,819	100	..	R	9	24	July	No	Op 58	20	Nov	
PENNSYLVANIA															
Ablington Memorial Hospital ⁺	Ablington	NPAssn	330	6,311	54	95	R	6	24	July	No	Req 56	No	Nov	
Allentown Hospital ^{1,2}	Allentown	NPAssn	410	8,103	68	100	R	10	12	July	No	Req 45	No	Sept	
Sacred Heart Hospital ¹	Allentown	Church	335	4,651	..	..	R	7	12	July	No	Req 35	10	Jan	
Altoona Hospital ¹	Altoona	NPAssn	173	3,022	..	..	R	4	12	July	No	Req 20	25	Jan	
Mersey Hospital ¹	Altoona	NPAssn	180	3,611	48	100	R	5	12	July	No	Req 27	25	Full	
St. Luke's Hospital ^{2,3}	Bethlehem	NPAssn	220	4,992	47	100	R	9	12	July	No	Req 26	100yr	Varies	
Braddock General Hospital ¹	Braddock	NPAssn	147	3,051	28	..	R	4	12	July	No	Req 21	25	Nov	
Bryn Mawr Hospital ⁺	Bryn Mawr	Corp	264	4,625	31	100	R	6	12	July	No	Req 41	No	Nov	
Chester Hospital ^{1,2}	Chester	NPAssn	250	5,333	48	100	R	8	12	July	No	Req 27	15	Nov	
George F. Giesinger Memorial Hospital ^{1,2}	Danville	NPAssn	174	5,694	42	100	R	10	12	July	No	Req 44	No	Dec	
Fitzgerald-Mersey Hospital ¹	Darby	Church	248	4,414	43	100	R	8	12	July	No	Req 59	25	Nov	
Easton Hospital ¹	Easton	NPAssn	220	5,408	47	50	R	4	12	July	No	Req 25	(1)	Jan	
Hamot Hospital ¹	Eric	NPAssn	255	6,533	56	34	R	8	12	July	No	Req 31	25	Jan	
St. Vincent's Hospital ¹	Eric	NPAssn	292	7,635	46	80	R	8	12	July	No	Req 30	115	Nov	
Harrisburg Hospital ¹	Harrisburg	NPAssn	264	6,637	46	75	R	10	12	July	No	Req 28	115	Nov	
Harrisburg Polyclinic Hospital ¹	Harrisburg	NPAssn	180	3,743	..	98	R	4	12	July	No	Req 18	25	Nov	
Conemaugh Valley Memorial Hospital ¹	Johnstown	NPAssn	345	6,538	35	100	R	8	12	July	No	Op 22	25	Nov	
Neshitt Memorial Hospital ¹	Kingston	NPAssn	142	2,523	20	30	R	3	12	July	No	Req 55	25	Varies	
Lancaster General Hospital ¹	Lancaster	NPAssn	281	5,729	..	100	R	8	12	July	No	Req 56	117.50	Nov	
St. Joseph's Hospital ¹	Lancaster	Church	230	4,262	42	..	R	6	12	July	No	Req 54	117.50	Jan	
McKeesport Hospital ¹	McKeesport	NPAssn	325	5,498	27	100	R	7	12	July	No	Req 42	25	Nov	
Montgomery Hospital ¹	Norristown	NPAssn	160	3,698	..	100	R	5	12	July	No	Req 23	30	Varies	
Chestnut Hill Hospital ¹	Philadelphia	NPAssn	114	2,229	..	..	R	4	12	July	No	Req 53	50	Nov	
Frankford Hospital ¹	Philadelphia	NPAssn	192	3,723	84	15	R	7	12	July	No	Req 29	No	Nov	
Germantown Dispensary and Hospital ^{2,3}	Philadelphia	NPAssn	411	6,720	69	100	R	6	24	July	No	Req 36	No	Nov	
Graduate Hospital of the University of Pennsylvania ⁺	Philadelphia	NPAssn	461	6,822	..	..	R	8	24	July	(87)	Req 50	No	Nov	
Hahnemann Hospital ^{2,3}	Philadelphia	NPAssn	667	12,532	60	100	R	24	24	July	No	Req 19	No	Jan	
Hosp. of the Protestant Episcopal Church ^{1,2}	Philadelphia	Church	530	6,834	..	..	R	8	24	Jan-July	No	Req 78	No	Nov	
Hospital of the Univ. of Pennsylvania ^{1,2,3,4}	Philadelphia	NPAssn	528	10,289	1	75	R	14	24	July	No	Req 56	No	Nov	
Hosp. of the Woman's Medical College ²	Philadelphia	NPAssn	173	3,293	..	100	R	6	12	July-Sept	No	Req 41	No	Oct	
Jefferson Medical College Hospital ^{2,3}	Philadelphia	NPAssn	685	12,752	71	82	R	14	27	June	No	Req 44	No	Nov	
Jewish Hospital ^{1,2,3}	Philadelphia	NPAssn	479	8,073	48	100	R	9	24	June	(88)	Req 60	No	Oct	
Lankenau Hospital ¹	Philadelphia	NPAssn	297	4,232	..	103	R	5	24	July	(89)	Req 35	No	Nov	
Memorial Hospital ^{1,2}	Philadelphia	NPAssn	101	1,978	26	..	R	3	12	July	No	Req 23	50	Nov	
Mersey Hospital ¹	Philadelphia	NPAssn	125	1,666	..	100	R	5	12	July	(90)	Req 24	50	Nov	
Methodist Hospital ¹	Philadelphia	Church	208	3,443	5	65	R	8	12	July	No	Req 28	No	Nov	
Misericordia Hospital ^{1,2}	Philadelphia	Church	231	4,505	46	54	R	9	12	July	No	Req 43	No	1bc	
Mount Sinai Hospital ^{1,2,3,4}	Philadelphia	NPAssn	317	6,562	48	100	R	7	24	June	No	Req 50	No	Nov	
Northeastern Hospital ^{1,2}	Philadelphia	NPAssn	102	2,169	..	100	R	4	12	July	No	Req 43	20	Jan	
Pennsylvania Hospital ^{2,3}	Philadelphia	NPAssn	569	8,662	..	100	R	12	24	July-Sept-Nov	(91)	Req 69	No	Full	
Philadelphia General Hospital ^{1,2,3}	Philadelphia	City	2,732	26,634	100	..	R	30	24	July	(92)	Req 69	No	Jan	
Presbyterian Hospital ^{2,3}	Philadelphia	Church	256	4,983	..	100	R	6	24	July	No	Req 52	No	Oct	
St. Joseph's Hospital ¹	Philadelphia	Church	184	2,379	15	..	R	6	12	July	No	Req 25	20	Jan	
St. Luke's and Children's Medical Center ¹	Philadelphia	NPAssn	259	4,920	63	100	R	8	12	July	No	Req 23	No	Nov	
St. Mary's Hospital ¹	Philadelphia	Church	250	4,221	..	100	R	8	12	July	No	Req 25	No	Full	
Temple University Hospital ^{2,3}	Philadelphia	NPAssn	471	10,012	..	..	R	9	24	June	(92)	Req 69	No	Nov	
United States Naval Hospital ¹	Philadelphia	Navy	951	8,025	100	..	R	9	12	July	(93)	Op 40	(1)	July	

Name of Hospital	Location	Control	Capacity	Total Patients Treated	% Service Cases	% Priv. Pts. Worked Up by Interns	Type of Internship	Interns Appointed Annually	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Stipend per Month	Appointments Made	
PENNSYLVANIA—Continued																
Woman's Hospital ^{2,3,4}	Philadelphia	NPAssn	166	2,715	100	R	6	12	July	(94)	Op	35	No		Oct	
Women's Homeopathic Hospital ¹	Philadelphia	NPAssn	200	3,055	80	R	4	12	July	No	Req	31	\$15		Varies	
Allegheny General Hospital ^{1,4}	Pittsburgh	NPAssn	598	9,332	52	100	R	16	12	July	No	Req	34	No	Fall	
Mersey Hospital ^{1,4}	Pittsburgh	Church	680	12,843	100	R	24	12	July	(95)	Req	37	(2)		Nov	
Montefiore Hospital ⁴	Pittsburgh	NPAssn	257	6,203	23	100	R	10	12	July	No	Req	44	No	Nov	
Passavant Hospital ¹	Pittsburgh	Church	140	2,416	51	49	R	5	12	July	No	Req	33	\$10	Nov	
Pittsburgh Hospital ¹	Pittsburgh	NPAssn	210	3,849	91	R	6	12	July	No	Req	25	\$25		Nov	
Presbyterian Hospital ^{1,4}	Pittsburgh	NPAssn	150	3,205	34	99	R	20	12	July	(96)	Req	34	No	Sept	
St. Francis Hospital ^{3,4}	Pittsburgh	Church	683	12,708	100	R	20	12	July	(97)	Req	21	No		Oct	
St. John's G	Pittsburgh	NPAssn	225	4,479	48	52	R	5	12	July	No	Req	27	(j)	Nov	
St. Joseph's	Pittsburgh	Church	140	2,380	100	R	4	12	July	No	Req	29	\$25		Dec	
Shadyside Hospital ³	Pittsburgh	NPAssn	280	5,684	30	100	R	8	12	July	(97)	Req	30	No	Jan	
South Side Hospital ¹	Pittsburgh	NPAssn	225	4,895	100	R	7	12	July	No	Req	17	\$25		Jan	
Western Pennsylvania Hospital ^{1,3,4}	Pittsburgh	NPAssn	661	10,290	87	R	18	12	July	No	Req	26	No		Nov	
Pottsville Hospital ¹	Pottsville	NPAssn	172	2,934	58	100	R	5	12	July	No	Req	25	\$25		Nov
Homeopathic Hospital	Reading	NPAssn	119	2,551	46	R	4	12	June	No	Req	21	\$25		Nov	
Reading Hospital ^{3,4}	Reading	NPAssn	325	5,672	41	100	R	10	12	July	No	Req	63	No		Dec
St. Joseph Hospital	Reading	Church	205	3,726	60	R	6	12	July	(98)	Req	32	\$50		Nov	
Robert Packer Hospital ⁴	Sayre	NPAssn	325	7,094	81	R	10	12	July	No	Req	54	No		Oct	
Moses Taylor Hospital	Seranton	NPAssn	120	2,107	100	R	3	12	July	(99)	Req	33	\$25		Jan	
Seranton State Hospital ¹	Seranton	State	315	3,869	95	R	8	12	July	No	Req	19	\$25		Oct	
Valley Hospital ¹	Sewickley	NPAssn	140	2,939	16	100	R	4	12	July	No	Req	29	\$25		Jan
Uniontown Hospital	Uniontown	NPAssn	225	5,057	24	80	R	6	12	July	No	Req	29	\$25		Jan
Washington Hospital	Washington	NPAssn	166	3,302	31	100	R	5	12	July	No	Req	38	\$25		Oct
Chester County Hospital ³	West Chester	NPAssn	168	3,138	62	38	R	4	12	July	No	Req	35	\$25		Jan
Mersey Hospital ^{1,3}	Wilkes-Barre	Church	220	4,112	58	62	R	6	12	July	No	Req	20	\$40yr		Nov
Wilkes-Barre General Hospital ¹	Wilkes-Barre	NPAssn	403	8,037	56	100	R	12	12	July	No	Req	29	No		Nov
Columbia Hospital ¹	Wilkesburg	Church	217	3,844	63	100	R	5	12	July	No	Req	25	\$20		Fall
Williamsport Hospital ¹	Williamsport	NPAssn	275	5,118	33	33	R	7	12	July	No	Req	19	\$10		Dec
Windber Hospital ¹	Windber	NPAssn	117	2,760	100	R	4	12	July	No	Req	34	\$25		Jan	
York Hospital	York	NPAssn	219	4,939	100	R	8	12	July	No	Req	32	\$25		Jan	
RHODE ISLAND																
United States Naval Hospital	Newport	Navy	345	2,143	100	R	6	12-18	Varies	(100)	Req	36	(b)		Varies	
Memorial Hospital	Pawtucket	NPAssn	196	3,455	59	41	R	3	24	July	No	Req	39	No		Nov
Homeopathic Hospital	Providence	NPAssn	196	4,907	33	8	M	5	12	July	No	Req	24	\$50		Nov
Rhode Island Hospital ^{3,4}	Providence	NPAssn	486	8,721	83	67	R&S	14	12&24	Monthly	(101)	Req	62	No		Nov
St. Joseph's Hospital ³	Providence	Church	350	5,634	41	46	R	4	24	July/Nov	No	Req	36	No		Nov
SOUTH CAROLINA																
Roper Hospital ⁴	Charleston	NPAssn	355	8,358	70	100	R	12	12	July	No	Req	43	\$5		Dec
United States Naval Hospital	Charleston	Navy	93	854	100	R	5	12	Varies	No	Req	50	(b)		Varies	
Columbia Hospital ¹	Columbia	County	305	8,300	29	00	R	8	12	July	No	Req	23	\$35(f)		Nov
Greenville General	Greenville	City	275	7,072	100	R	5	12	July	No	Req	21	\$20		Dec	
United States Navy	Parris Island	Navy	173	2,028	100	R	4	12	July	No	Req	25	(b)		Varies	
TENNESSEE																
Baroness Erlanger Hospital ^{3,4}	Chattanooga	CyCo	510	9,246	59	50	R	20	12	July	(102)	Req	24	\$25		Nov
Knoxville General Hospital ^{3,4}	Knoxville	City	325	8,724	80	100	R	9	18	Quarterly	No	Req	39	\$25		Varies
Baptist Memorial Hospital	Memphis	Church	500	13,068	36	20	R	10	18	(p)	No	None	20	\$25		Mar/Nov
John Gaston Hospital ^{3,4}	Memphis	City	550	15,639	95	R&S	24	12&18	Monthly	No	Req	25	\$20		Quarterly	
Methodist Hospital ⁴	Memphis	Church	302	7,428	30	R	6	12	Quarterly	No	None	33	\$50		6mo/yr	
St. Joseph Hospital	Memphis	Church	240	6,949	18	100	R	7	12	(g)	No	None	21	\$35		Quarterly
George W. Hubbard Hospital ^{1,4}	Nashville	NPAssn	185	2,345	96	100	R	8	12	July	No	Req	25	\$15		Nov
Nashville General Hospital ^{3,4}	Nashville	City	305	6,765	00	R	11	12	July	No	Req	43	\$20		Dec	
St. Thomas Hospital	Nashville	Church	204	5,667	100	R	7	12	July	No	None	23	\$10		Sept	
Vanderbilt University Hospital ^{1,4}	Nashville	NPAssn	391	6,295	60	40	S	21	12	July	(103)	Op	62	No		Nov
TEXAS																
Baylor University Hospital ^{1,4}	Dallas	Church	441	11,821	20	100	R	18	12	July	No	Req	31	\$25		Nov
Methodist Hospital ^{1,3}	Dallas	Church	140	3,820	11	97	R	5	12	July	No	Req	32	\$25(f)		Fall
Parkland Hospital ^{1,3,4}	Dallas	CyCo	389	9,639	97	100	R	12	12	Jan/July	No	Req	31	\$10		Nov
St. Paul's Hospital	Dallas	Church	300	9,435	14	100	R	10	12	July	No	Req	19	\$25		Oct
El Paso City-County Hospital ³	El Paso	CyCo	212	3,855	100	R	4	12	July	No	Req	31	\$25(h)		Nov	
William Beaumont General Hospital	El Paso	Army	707	5,949	100	R	4	12	July	No	Op	76	\$90		Jan	
City and County Hospital ³	Fort Worth	CyCo	188	5,375	100	R	8	12	July	No	Req	39	\$25		Nov	
Harris Memorial Methodist Hospital ¹	Fort Worth	Church	261	4,422	14	100	R	7	12	July	No	Req	72	\$25(h)		Nov
St. Joseph's Hospital	Fort Worth	Church	200	4,995	18	100	R	5	12	July	No	None	19	\$25(f)		Nov
John Sealy Hospital ^{1,4}	Galveston	State	421	7,707	72	50	R	12	12	July	No	Req	65	No		Dec
Hermann Hospital	Houston	NPAssn	400	4,568	70	100	R	3	24	July	No	Req	46	\$20-30		Dec
Jefferson Davis Hospital ^{1,3,4}	Houston	CyCo	496	14,305	100	R	16	24	July	No	Req	28	\$25-30		Nov	
Medico and Surgical Memorial Hospital ¹	San Antonio	NPAssn	115	4,625	100	R	5	12	July	No	Req	46	\$25		Nov	
Nix Hospital ¹	San Antonio	Corp	169	5,314	100	R	4	12	July	(104)	None	48	\$50		Varies	
Robert I	San Antonio	County	218	5,027	100	R	13	12	July	No	Req	40	\$10		Nov	
Santa R	San Antonio	Church	318	7,526	10	100	R	8	12	July	No	Req	23	\$25		Nov
Station	San Antonio	Army	1,233	11,250	100	R	10	12	July	No	Req	86	\$60		Jan	
Kings Daughters Hospital	Temple	NPAssn	118	3,054	80	R	3	12	July	No	Req	24	\$50		Nov	
Scott and White Hospital ³	Temple	Corp	175	3,609	100	R	8	12	July	(105)	Req	44	\$25		Oct	
UTAH																
Thomns D. Dee Memorial Hospital	Ogden	Church	224	6,606	80	20	R	6	24	July	No	Req	36	\$25		Nov
Dr. W. H. Groves Latter-Day Saints Hosp.	Salt Lake City	Church	440	8,825	10	100	R	6	12	July	(106)	None	31	\$15-20		Nov
Holy Cross Hospital ¹	Salt Lake City	Church	254	4,492	2	100	R	3	12	July	No	None	23	\$25(f)		Nov
St. Mark's Hospital	Salt Lake City	Church	164	3,766	3	100	R	3	12	July	No	None	22	\$25(f)		Nov
Salt Lake County General Hospital	Salt Lake City	County	255	4,096	100	R	4	24	July	No	Req	16	(k)		Nov	
VERMONT																
Bishop DeGoesbriand Hospital ^{1,3}	Burlington	Church	135	3,692	28	30	R	3	12	July	No	None	41	\$25		Nov
Mary Fletcher Hospital ^{3,4}	Burlington	NPAssn	150	5,703	66	100	R	5	12	July/Sept	No	None	37	\$25		Nov
VIRGINIA																
University of Virginia Hospital ⁴	Charlottesville	State	411	8,518	100	R	19	12	July	(107)	Req	40	No		Nov	
Hospital of St. Vincent de Paul	Norfolk	Church	250	4,952	25	65	R	6	12	July	No	Req	22	\$25		Nov
Norfolk General Hospital ⁴	Norfolk	NPAssn	272	8,009	26	100	R	8	12	July/Oct	(108)	Req	25	\$25		Dec
United States Marine Hospital ³	Norfolk	USPHS	360	9,369	100	R	8	12	July	(109)	Req	74	\$62.50		Nov	
Norfolk Naval Hospital	Portsmouth	Navy	1,050	9,232	100	R	6	12	July	No	Req	47	(b)		July	
Johnston-Willis Hospital ¹	Richmond	Corp	142	5,317	75	R	3	12	July	No	Req	47	\$15		Oct	
Medical College of Virginia, Hosp. Div. ^{1,3,4}	Richmond	State	512	10,142	82	18	R&S	25	12	July	(110)	Req	37	No		Nov
(Memorial, Dooley and St. Philip Hospitals)	Richmond	Corp	112	2,291	100	R	3	12	July	No	None	23	\$20(n)		Jan	
Stuart Circle Hospital	Roanoke	NPAssn	114	2,241	100	R	2	12	July	No	Req	67	\$20		Dec	
Jefferson Hospital ⁴	Roanoke	NPAssn	134	3,479	100	R	3	12	July	No	Req	29	\$20		Dec	
Lewis-Gale Hospital	Roanoke	NPAssn	134	3,479	100	R	3	12	July	No	Req	29	\$20		Dec	

Name of Hospital	Location	Control	Capacity	Total Patients Treated	% Service Cases	% Priv. Pts. Worked Up by Interns	Type of Internship	Interns Appointed Annually	Length of Service in Months	Service Commences	Affiliated Service	Outpatient Service	Autopsy Percentage	Stipend per Month	Appointments Made
WASHINGTON															
United States Naval Hospital.....	Bremerton.....	Navy	316	2,870	100	..	R	..	12	Varies	Yes	Req	40	(b)	Varies
Columbus Hospital ¹	Seattle.....	Church	230	3,429	18	100	R	4	12	July	(111)	Req	36	\$30	Nov
King County Hospital Unit No. 1, 2, 3+ (Harrowview)	Seattle.....	County	505	13,109	100	..	R	12	24	July	No	Req	49	\$30	Nov
Providence Hospital	Seattle.....	Church	400	10,375	..	..	R	8	12	July	(111)	None	20	\$30	Dec
Seattle General Hospital.....	Seattle.....	NPAssn	125	3,536	..	..	R	3	12	July	(112)	None	28	\$30	Jan
Swedish Hospital	Seattle.....	NPAssn	321	6,297	3	97	R	9	12	JulyOct	(113)	None	39	\$30	Nov
United States Marine Hospital ²	Seattle.....	USPHS	400	3,477	100	..	R	10	12	July	(114)	Req	73	\$62.50	July
Virginia Mason Hospital.....	Seattle.....	NPAssn	167	4,511	..	100	R	4	12	June	No	Req	66	\$30	Oct
Deaconess Hospital	Spokane.....	Church	221	5,489	..	..	R	4	12	July	(115)	None	21	\$35	Nov
Saered Heart Hospital.....	Spokane.....	Church	346	8,128	..	100	R	9	12	July	(115)	None	33	\$35	Nov
St. Luke's Hospital.....	Spokane.....	NPAssn	180	3,554	..	..	R	4	12	July	(116)	None	27	\$35	July
Pierce County Hospital.....	Tacoma.....	County	100	3,789	100	..	R	6	12	July	No	Req	35	\$45	Nov
St. Joseph's Hospital.....	Tacoma.....	Church	329	5,294	..	..	R	4	12	July	No	None	57	\$35	Oct
Tacoma General Hospital.....	Tacoma.....	NPAssn	220	5,813	..	..	R	4	12	July	No	None	49	\$30	Fall
WEST VIRGINIA															
Charleston General Hospital ^{1,4}	Charleston.....	NPAssn	270	8,917	50	50	R	9	12	July	No	Req	38	\$25	Nov
Kanawha Valley Hospital.....	Charleston.....	Corp	142	3,182	90	75	R	3	12	July	No	Req	47	\$40	Nov
Chesapeake and Ohio Hospital.....	Huntington.....	NPAssn	130	2,807	..	100	R	3	12	July	No	Req	15	\$37.50	Dec
St. Mary's Hospital.....	Huntington.....	Church	230	4,946	20	100	R	4	12	July	No	Req	19	\$25	Nov
St. Joseph's Hospital.....	Parkersburg.....	Church	139	2,457	..	100	R	3	12	July	No	None	35	\$50	Nov
Ohio Valley General Hospital ³	Wheeling.....	NPAssn	275	7,246	9	100	R	9	12	July	No	Req	22	\$25	Nov
Wheeling Hospital	Wheeling.....	Church	250	3,516	12	100	R	4	12	July	No	None	28	\$40	March
WISCONSIN															
St. Elizabeth Hospital.....	Appleton.....	Church	210	4,138	..	80	R	3	12	July	No	None	33	\$25	Nov
Luther Hospital	Eau Claire.....	NPAssn	155	3,874	..	83	R	4	12	July	No	None	49	\$25(f)	Nov
St. Agnes Hospital.....	Fond du Lac.....	Church	233	5,150	..	..	R	4	12	July	No	None	19	\$25	Varies
St. Francis Hospital.....	La Crosse.....	Church	292	5,106	..	100	R	4	12	July	No	Req	49	\$20	Nov
Madison General Hospital ¹	Madison.....	NPAssn	203	5,633	..	100	R	6	12	July	No	None	51	\$25	Nov
Methodist Hospital ¹	Madison.....	Church	124	2,174	..	100	R	3	18	Quarterly	No	Req	24	\$30	Quarterly
St. Mary's Hospital.....	Madison.....	Church	225	5,156	..	..	R	5	12	June	No	None	30	\$25	AugDec
State of Wisconsin General Hospital ^{1,4}	Madison.....	State	672	14,696	94	..	R	24	12	July	No	Req	75	No	Nov
St. Joseph's Hospital ¹	Marshfield.....	Church	195	3,399	..	80	R	3	12	JanJuly	No	None	21	\$50	Oct
Columbia Hospital ⁴	Milwaukee.....	NPAssn	150	3,367	5	100	R	5	24	July	(117)	None	48	\$25	Nov
Evangelical Deaconess Hospital ¹	Milwaukee.....	Church	163	4,494	1	90	R	5	12	June	(4)	None	22	\$25	Nov
Milwaukee Hospital	Milwaukee.....	Church	272	7,408	15	100	R	6	12	July	No	Req	50	\$25	Nov
Misericordia Hospital	Milwaukee.....	Church	154	2,764	7	..	R	4	12	July	No	None	10	\$100	Dec
Mount Sinai Hospital.....	Milwaukee.....	NPAssn	190	5,570	11	100	R	6	12	July	No	Req	37	\$25	Nov
St. Joseph's Hospital ^{1,4}	Milwaukee.....	Church	397	8,027	..	..	R	10	12	June	(118)	Req	31	\$17	Nov
St. Luke's Hospital.....	Milwaukee.....	Church	130	4,030	..	100	R	2	12	July	No	Req	26	\$50	Oct
St. Mary's Hospital ⁴	Milwaukee.....	Church	200	6,410	5	100	R	5	12	July	No	None	23	\$25	Nov
Mercy Hospital ¹	Oshkosh.....	Church	224	3,247	..	..	R	4	12	July	No	None	37	\$33	Varies
St. Mary's Hospital.....	Racine.....	Church	213	4,863	..	100	R	2	12	July	No	None	40	\$25	Nov
St. Mary's Hospital ¹	Superior.....	Church	170	1,925	..	..	R	2	12	July	No	None	39	\$25	Oct
Milwaukee County Hospital ^{1,4}	Wauwatosa.....	County	1,125	17,312	100	..	R	40	12	June	(119)	Req	38	\$30	Nov
CANAL ZONE															
Gorgas Hospital	Ancon.....	Fed	1,388	20,964	100	..	R	13	12	July	No	Op	54	\$65	Varies
HAWAII															
Queen's Hospital ⁴	Honolulu.....	NPAssn	320	10,380	..	..	R	6	24	Quarterly	(120)	None	73	\$45-90	Jan
United States Naval Hospital.....	Pearl Harbor.....	Navy	178	3,589	100	..	R	4	12	Varies	No	Req	100	(b)	Varies
PHILIPPINES															
Philippine General Hospital ¹	Manila.....	Govt	895	20,622	91	..	R	126(na)	12	March	(121)	Req	..	No	....
PUERTO RICO															
Bayamón Charity District Hospital.....	Bayamón.....	Govt	343	5,447	100	..	R	6	12	July	No	Req	42	\$25	Jan
Fajardo Charity District Hospital ¹	Fajardo.....	Govt	343	1,481	100	..	R	6	12	July	No	Req	59	\$25	Jan
Presbyterian Hospital ¹	San Juan.....	Church	142	2,691	51	80	R	4	12	July	No	Req	23	\$10	JanJune

Numerical and other references will be found on page 766.

HOSPITALS APPROVED FOR INTERNSHIPS IN THE DOMINION OF CANADA

For the benefit of graduates of approved medical colleges who desire an internship in Canada, the Council on Medical Education and Hospitals of the American Medical Association has declared that hospitals which conform to the standards of the Department of Hospital Service of the Canadian Medical Association should be regarded as giving an internship equivalent in educational value to that offered by hospitals in the United States approved for intern training by the Council. It is understood, however, that this statement applies only to hospitals that are unqualifiedly "Approved" under the Canadian plan and does not apply to that group referred to as "Commended."

The following list of hospitals, revised to June 1, 1941, has been furnished by the Department of Hospital Service.

Name of Hospital	Location	Name of Hospital	Location	Name of Hospital	Location
Victoria General Hospital	Vancouver, B. C.	McKellar General Hospital	Hamilton, Ont.		
		St. Joseph's Hospital	Ottawa, Ont.		
		Ottawa Civic Hospital	Ottawa, Ont.		
Jeffrey Hale's Hospital.....	Quebec, Que.				
Children's Memorial Hosp.....	Montreal, Que.				
Homoeopathic Hospital.....	Montreal, Que.				
Hospital Notre Dame.....	Montreal, Que.				
Hospital Ste. Justine.....	Montreal, Que.				
Hôtel Dieu of St. Joseph.....	Montreal, Que.				
Hospital Ste. Anne.....	Quebec, Que.				
	Quebec, Que.				
Royal Victoria Hospital.....	Montreal, Que.				
St. Mary's Hospital.....	Montreal, Que.				
Woman's General Hospital (Westmount)	Montreal, Que.	Victoria Hospital.....	London, Ont.		
		Metropolitan General Hosp.....	Windsor, Ont.		
				Royal Alexandra Hospital.....	Edmonton, Alta.
				University of Alberta Hosp.....	Edmonton, Alta.
				St. Paul's Hospital.....	Vancouver, B. C.
				Vancouver General Hospital.....	Vancouver, B. C.
				Royal Jubilee Hospital.....	Victoria, B. C.
				St. Joseph's Hospital.....	Victoria, B. C.

NOTES

- (a) In lieu of maintenance
(b) Salary established by government pay tables
(c) \$ 0 per month second year
(d) Bonus of \$80
(e) Bonus of \$160
(f) Bonus of \$100
(g) Every two months
(h) Bonus of \$120

- (i) Bonus of \$60
(j) Bonus of \$300
(k) \$15 per month first year, \$25 per month second year bonus of \$120 each year
(m) Bonus of \$150
(n) Bonus of \$50
(o) Bonus of \$75
(p) Every six weeks
(q) \$10 per month second year
(r) \$15 per month second year
(s) \$25 per month first year \$50 per month second year, bonus of \$100

- (t) February, June, July, October
(u) May, June, July, October
(v) Bonus of \$30
(w) \$25 per month second year
(x) \$20 per month after 12 months
(y) \$15 per month first year, \$50 per month second year, bonus of \$60 each year
(z) Bonus of \$40
(aa) All internships reserved for the fifth year students of the College of Medicine, University of the Philippines

- 1 Women internes admitted
2 Women internes only
3 Dental interns employed

Affiliation as Referred to in Column Headed: "Affiliated Service"

- 4 Children's Hospital, pediatrics
5 California Babies Hospital, Georgia Receiving Hospital, Los Angeles, pediatrics, emergency
6 Los Angeles Maternity Service
7 Children's Hospital, Los Angeles Maternity Service
8 Fairmont Hospital, San Leandro, and Arroyo Del Valle Sanatorium, Livermore, medicine, surgery, tuberculosis
9 Woman's Hospital, Pasadena, obstetrics
10 Mercy Hospital, San Diego, obstetrics, gynecology, pediatrics
11 Laguna Road Home Infirmary, San Francisco, chronic diseases; Hassler Health Home, Redwood City, tuberculosis
12 St Francis Hospital, Stanford University Hospitals, San Francisco, obstetrics, pediatrics
13 Franklin Hospital, San Francisco, obstetrics, gynecology, pediatrics
14 Porter Sanatorium and Hospital, Denver, general
15 Gallinger Municipal Hospital, Washington, pediatrics, tuberculosis, communicable diseases
16 Gallinger Municipal Hospital, Children's Hospital, Washington obstetrics, pediatrics
17 Grady Hospital, Atlanta
18 Misericordia Hospital and Home for Infants, Chicago, obstetrics, pediatrics
19 Municipal Contagious Disease Hospital, Chicago, Winfield Sanatorium, Winfield, tuberculosis
20 Chicago Maternity Center, obstetrics, gynecology, pediatrics
21 Rotation service established between Broadlans and approved private hospitals
22 Watkins Memorial Hospital Lawrence, general
23 Sedgwick County Hospital, Wichita
24 Salvation Army Home and Hospital, Sedgwick County Hospital, Wichita, obstetrics, general
25 Children's Free Hospital, Louisville City Hospital, pediatrics, obstetrics, gynecology
26 Children's Free Hospital, Kosair Crippled Children Hospital, Louisville, pediatrics orthopedics, Waverly Hills Sanatorium, Waverly Hills, tuberculosis
27 Touro Infirmary, New Orleans, obstetrics, gynecology, pediatrics
28 Shreveport Charity Hospital, obstetrics
29 Annapolis Emergency Hospital, obstetrics, gynecology
30 University Hospital, Sydenham Hospital, Baltimore, pediatrics, obstetrics, communicable diseases
31 James Lawrence Kernan Hospital and Industrial School for Crippled Children, Baltimore
32 Sydenham Hospital, Baltimore, communicable diseases
33 Boston City Hospital, neurosurgery
34 Children's Hospital, Boston, pediatrics
35 Evangeline Booth Maternity Hospital and Home, Boston
36 Norfolk County Hospital, South Brimtree, tuberculosis
37 Essex Sanatorium, Middleton, tuberculosis
38 Wesson Maternity Hospital Shriners Hospital for Crippled Children, Springfield, obstetrics, orthopedics
39 Wesson Maternity Hospital, Health Department Hospital, Springfield, obstetrics, communicable diseases
40 Herman Kiefer Hospital Detroit
41 Herman Kiefer Hospital, Children's Hospital, Detroit, communicable diseases, obstetrics, pediatrics
42 Herman Kiefer Hospital, Detroit, communicable diseases, St Joseph's Retreat, Dearborn, psychiatry
43 Jackson County Sanatorium, tuberculosis, Jackson County Isolation Hospital, Jackson communicable diseases
44 Ingham Sanatorium, Lansing, tuberculosis
45 Ingham Sanatorium, Boy's Vocational School Hospital, Lansing
46 Oakland County Tuberculosis Sanatorium, Pontiac State Hospital, Pontiac, tuberculosis, psychiatry
47 Miller Memorial Hospital, Duluth, outpatient service
48 Gillette State Hospital for Crippled Children, St Paul
49 Children's Hospital, St Paul, pediatrics
50 Shriners Hospital for Crippled Children, City Isolation Hospital, St Louis Children's Hospital Barnard Tree Skin and Cancer Hospital, St Louis
51 Jewish Sanatorium, Robertson, tuberculosis, City Isolation Hospital, St Louis, communicable diseases
52 Mexican Brothers Hospital, St Louis, outpatient service
53 Robert Koch Hospital, City Isolation Hospital St Louis, tuberculosis, communicable diseases
54 St Mary's Group of Hospitals includes the Firmin Desloge Hospital, St Mary's Hospital and Mount St Rose Sanatorium
55 St Elizabeth Hospital, Elizabeth, obstetrics, gynecology
56 Margaret Hague Maternity Hospital, Jersey City
57 New Jersey State Hospital, Marlboro, psychiatry, Allenwood Sanatorium, Allenwood, tuberculosis
58 Fenwick Sanatorium New Lisbon, tuberculosis
59 Anthony D. Brady Maternity Hospital Albany
60 Brooklyn Thoracic Hospital tuberculosis
61 Emergency Hospital of the Sisters of Charity, St Mary's Infant Asylum and Maternity Hospital, Providence Retreat, Buffalo
62 Millard Fillmore Hospital, Buffalo, surgery
63 Edward J. Meyer Memorial Hospital, Buffalo, pediatrics, communicable diseases, psychiatry
64 Chemung County Sanatorium, Elmira, tuberculosis
65 Binghamton State Hospital, Binghamton, psychiatry
66 Our Lady of Victory Infants' Home, Lackawanna, obstetrics, pediatrics
67 Essex County Hospital for Contagious Diseases
68 Jewish Maternity Hospital, New York City
69 Bellevue Hospital, New York City, surgery
70 Strong Memorial Hospital, Rochester, surgery
71 Misericordia Hospital, New York City, obstetrics, pediatrics
72 Rotation service established between Hospital of the Good Shepherd, Syracuse Memorial Hospital, City Hospital and Syracuse Psychopathic Hospital
73 Children's Hospital, Akron, pediatrics
74 Molly Stark Sanatorium, Canton, tuberculosis, Massillon State Hospital, Massillon, psychiatry
75 Children's Hospital, Cincinnati, pediatrics
76 Hamilton County Tuberculosis Sanatorium Hamilton County Home and Chronic Disease Hospital, Cincinnati
77 Longview State Hospital, Cincinnati, psychiatry
78 Cincinnati General Hospital, pediatrics, otolaryngology
79 St Ann's Maternity Hospital, Cleveland
80 Children's Hospital, Columbus, pediatrics
81 St Ann's Infant Asylum and Maternity Hospital, Children's Hospital, Columbus, obstetrics, pediatrics
82 Children's Hospital, Columbus State Hospital, pediatrics, psychiatry
83 Stillwater Sanatorium, Dayton, tuberculosis
84 Western Oklahoma Tuberculosis Sanatorium, Clinton, Central Oklahoma State Hospital, Norman, psychiatry
85 Haynes Memorial Hospital, Boston, communicable diseases
86 Shriners Hospital for Crippled Children Portland
87 Hospital of the University of Pennsylvania, Philadelphia, obstetrics
88 Philadelphia Hospital for Contagious Diseases
89 Children's Hospital of the Mary J. Drexel Home, Philadelphia, pediatrics
90 Henry Phipps Institute of the University of Pennsylvania, Philadelphia, tuberculosis
91 Children's Hospital, Philadelphia pediatrics
92 Shriners Hospital for Crippled Children, Philadelphia Hospital for Contagious Diseases
93 St Vincent's Hospital for Women and Children, Philadelphia, obstetrics, gynecology, pediatrics
94 Pennsylvania Hospital, Department for Mental and Nervous Diseases, Philadelphia
95 Roscha Foundling and Maternity Hospital, Municipal Hospital for Contagious Diseases, Pittsburgh
96 Elizabeth Steel Magee Hospital, Children's Hospital, Eye and Ear Hospital, Woman's Hospital, Pittsburgh
97 Municipal Hospital for Contagious Diseases, Pittsburgh
98 Berks County Tuberculosis Sanatorium, Reading
99 Scranton State Hospital, obstetrics
100 Union Hospital, Fall River, Mass., obstetrics, gynecology, pediatrics
101 Providence Lysaght Hospital
102 T. C. Thompson Children's Hospital, Pine Breeze Sanatorium, Chattanooga, pediatrics, tuberculosis
103 Willard Parker Hospital New York City, communicable diseases
104 Salvation Army Women's Home, Mission Home San Antonio, obstetrics
105 Gulf, Colorado and Santa Fe Hospital, Temple, medicine and surgery
106 Utah State Hospital, Provo, psychiatry
107 Blue Ridge Sanatorium, Charlottesville, tuberculosis
108 Henry A. Wise Hospital for Contagious Diseases, Norfolk
109 Florence Crittenton Home Children's Clinic of the Kings Daughters, Norfolk, obstetrics, pediatrics
110 Pine Camp Hospital Brook Hill, tuberculosis Crippled Children's Hospital, Richmond
111 King County Hospital, Seattle, outpatient service, Island Sanatorium and Isolation Hospital, Richmond Highlands tuberculosis
112 Children's Orthopedic Hospital, Florence Crittenton Home, Seattle
113 Children's Orthopedic Hospital, Seattle, pediatrics, orthopedics
114 King County Hospital, Seattle, obstetrics, gynecology, pediatrics
115 Idacell Sanatorium, Spokane, tuberculosis
116 Idacell Sanatorium, Salvation Army Women's Hospital and Home, Spokane, tuberculosis, obstetrics
117 Milwaukee Children's Hospital, South View Hospital, Milwaukee pediatrics, communicable diseases, Sunny View Sanatorium Waukegan, tuberculosis
118 St Michael Hospital, Milwaukee, general and outpatient service
119 South View Hospital, Milwaukee, communicable diseases
120 Haukeolani Children's Hospital, Honolulu
121 Quezon Institute, Quezon, and San Isidro Hospital, Manila

APPROVED RESIDENCIES AND FELLOWSHIPS

Council on Medical Education and Hospitals of the American Medical Association,
535 North Dearborn Street, Chicago

Hospitals, 616; Residencies, 4,683; Fellowships, 550

The following institutions approved by the Council on Medical Education and Hospitals are considered in position to furnish acceptable training in various specialties as indicated below. Residencies in specialties, as defined by the Council, are straight services of one or more years following an approved internship. A fellowship is a form of apprenticeship which in some cases is indistinguishable from a residency, although it usually offers greater opportunity for the study of basic sciences and research. Ordinarily a fellowship is a university rather than a hospital appointment. Mixed residencies are general hospital assignments following internship. They include services classified as general residencies and chief residencies.

The star (*) indicates hospitals that are also approved for the training of interns. All hospitals on the approved intern list are likewise accredited for general or mixed residencies.

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1. ANESTHESIOLOGY

Revision of list is now taking place in collaboration with the American Board of Anesthesiology

		Chief of Service	Inpatients Treated	Total Anesthetics	Inhalation Anesthetics	Autopsy Percentage	Residents	Assistant Residents	Fellowships	Service Begins	Length of Service (Years)	Beginning Stipend
Los Angeles County Hospital *	Los Angeles	A Guedell	48,902	12,468	4,850	57	3	0	0	7/1	1	\$75
White Memorial Hospital *	Los Angeles	L D Lee	7,317	4,431	1,350	41	12	0	0	7/1	13	\$80
Stanford University Hospitals *	San Francisco	A Dutton	9,736	4,064	2,684	53	1	1	0	7/1	1+	\$80
Hartford Hospital *	Hartford, Conn	R M Toxell	17,514	12,001	7,687	57	11	0	0	1/1&7/1	2	\$80
University Hospital *		P P Volpittio	8,495	2,700	2,430	32	1	0	0	7/1	1	\$80
Michael Reese Research and		I Stern	17,609	12,500	11,500	60	5	0	0	1/1&7/1	12	\$80
University of Chicago Clinics *	Chicago	W H Cassels	5,475	2,606	2,072	86	3	0	0	7/1&9/1	13	\$80
Methodist Hospital *	Indianapolis	H L Adams	10,844	6,029	6,005	78	0	4	0	7/1	12	\$100
University Hospitals *	Iowa City	J M Whitehead	17,013	12,889	12,217	24	4	0	0	7/1	12	\$75
University of Kansas Hospitals *	Kansas City, Kan	S C Cullen	18,551	8,602	4,850	55	1	4	0	7/1	10	\$80
Louisville City Hospital *	Louisville, Ky	P Lorhan	6,015	2,398	1,603	68	1	1	0	7/1	12	\$80
Boston City Hospital *	Boston	D M Dollar	12,422	4,820	2,619	24	1	1	0	7/1	12	\$83
Labre Clinic	Boston	W A Noonan	41,875	10,350	3,300	47	1	2	0	Varies	1+	\$80
Massachusetts General Hospital *	Boston	U H Iversole		7,500	3,600	0	0	5		1/1&7/1	12	\$100
Massachusetts Memorial Hospitals *	Boston	H K Beecher	15,352	10,574	5,390	63	1	0	0	7/1	1	\$12
Harper Hospital *	Boston	E B Ferguson	6,935	3,756	1,944	76	1	1	0	7/1	2	\$80
University		R J Murphy	17,677			36	1	0	0	7/1	1	\$85
Mayo Foundation		R Knight	8,785	4,474	2,862	79	0	0	3	7/1	3	\$80
West Jersey Homeopathic Hospital *	Camden, N J	(See page 788)										
Jersey City Hospital *	Jersey City, N J	H S Ruth	5,216	2,902	2,032	37	1	0	0	10/1	12	Varies
Albany Hospital *	Albany, N Y		18,841	9,306	3,477	18	1	4	0	1/1&7/1	1+	\$75
Bellerue Hospital *	New York City	F A D Alexander	11,010	5,288	4,470	73	3	1	0	7/1	1	\$80
Lower and Fifth Avenue Hospitals *	New York City	E A Roventine	67,892	16,462	11,901	33	3	8	0	1/1&7/1	23	\$80
French Hospital *	New York City	D F Brace	7,763	5,099	4,717	26	2	0	0	7/1	1	\$25
Lincoln Hospital *	New York City	S H Lesinger	5,893	2,300	1,934	36	1	0	0	7/1	1	\$80
Metropolitan Hospital *	New York City		10,982	3,141	2,341	31	2	0	0	Varies	1+	\$100
New York Polytechnic Medical School and Hospital *	New York City	D E Brace	12,060	2,991	2,382	31	3	0	0	7/1	1+	\$100
New York Post Graduate Medical School and Hospital *	New York City	B C Sword	7,812	4,718	2,249	23	3	0	0	1/1, 7/1, 10/1	2	\$100
Presbyterian Hospital *	New York City	V C Peterson	9,139	5,106	4,395	37	1	5	0	1/1&7/1	2	\$80
St Luke's Hospital *	New York City	W Appar	16,017	9,527	8,092	49	5	0	0	1/1&7/1	1	\$80
St Vincent's Hospital *	New York City	G E Burford	8,515	5,799	2,428	51	1	2	0	7/1	1 1/2	\$100
Grasslands Hospital *	New York City	G H Van Gulluwe	9,361	3,049	2,888	49	1	1	0	1/1&7/1	1	\$75
Huron Road Hospital *	Valhalla, N Y	H F Bishop	5,396	1,978	837	64	0	1	0	7/1	12	\$75
University Hospitals *	East Cleveland, O	R J Whitacre	8,015	6,442	3,678	43	1	1	0	7/1	12	\$80
University of Oregon Medical School Hospitals and Clinics *	Oklahoma City	H E Doudna	5,430	3,637	3,029	56	3	0	0	7/1	1	\$80
Hahnemann Hospital *	Portland	J Hutton	8,819	5,758	1,871	58	1	1	0	7/1	2	\$80
Presbyterian Hospital *	Philadelphia	J M Godfrey	12,552	7,022	4,413	49	2	0	0	9/1	1	\$80
Rhode Island Hospital *		I P North	1,983	4,020	3,988	82	1	0	0	7/1	1+	\$80
State of Wisconsin General Hospital		M Saklat	8,721	6,177	3,986	62	1	0	0	7/1	1	\$80
Columbia Hospital *		R M Waters	14,096	6,859	4,207	75	3	6	0	7/1		\$80
			3,367	2,129	1,614	48	1	0	0	Varies	3	\$80

2. CARDIOLOGY

		Chief of Service	Inpatients Treated	Service or House Calls	Outpatient Visits	Autopsies	Residents	Assistant Residents	Fellowships	Service Begins	Length of Service (Years)	Beginning Stipend
Indiana University Medical Center *	Indianapolis	G S Bond			223	1	0	0		7/1	13	\$80
House of the Good Samaritan	Boston	D S Smith	281		5,755	15	1	0	0	10/1	1+	\$80
Henry Ford Hospital *	Detroit	F J Smith	519	281	5,755	44	2	0	0	9/1	1+	\$80
Pennsylvania Hospital *	Philadelphia	W D Stroud			4,421	1	0	0		7/1	1+	\$80
St Francis Hospital *	Pittsburgh	A P D Zmura			10	14	1	0	0	9/1	1	\$80
Rhode Island Hospital *	Providence	F T Fulton			917	1	0	0		7/1	1	\$80

3. COMMUNICABLE DISEASES

	Chief of Service	Inpatients Treated	Service or House Cases	Outpatient Visits	Autopsies	Residents	Assistant Residents	Fellowships	Service Begins	Length of Service (Years)	Beginning Stipend
Los Angeles County Hospital*1	Los Angeles P Hamilton	2,530	2,530		90	3	0	0	Varies	1+	\$175
Hospital for Children*2	San Francisco E B Shaw	242	63		7	0	1	0	7/1	1	\$25
Municipal Hospitals*	Hartford, Conn C Thenebe	404	404		5	1	0	0	7/1	1	\$125
Cook County Hospital*1	Chicago A L Hoyne	1,680	1,680		43	1	0	0	1/1&7/1	1+	\$25
Municipal Contagious Disease Hospital*2	Chicago A L Hoyne	3,838	3,838		63	12	0	0	1/1&7/1	1+	\$100
Sydenham Hospital	Baltimore M G Tull	1,211	1,211		26	1	1	0	7/1	1	\$40
Boston City Hospital*1	Boston E H Place	1,340	1,340		10	2	0	0	Varies	1+	\$150
	Cleveland C Wesselhoeft	1,151	1,151		1	1	0	0	Varies	1+	None
	W MacDonal	516	516		3	1	0	0	Varies	13	\$113
	D C Young	2,900	2,619		33	3	0	0	7/1	13	\$150
	C Ferris	388	388		13	1	0	0	7/1	1	\$50
	R W Maxwell	1,081	1,081		27	1	1	0	7/1	1+	\$75
cases 1											
Kingston	F L Smith	4,244	4,244		22	7	0	0	1/1&7/1	1+	\$50
Queens Co	M B Gordon	3,691	3,691		31	0	0	0	1/1&7/1	1	\$100
Willard P	H A Reisman	814	814		5	1	0	0	7/1	1	\$100
City Hospital*	B W Hamilton	6,879	6,840		23	7	0	0	1/1&7/1	1	\$100
Philadelphia Hospital for Contagious Diseases 1	Cleveland H J Gerstenberger	2,018	2,018	1,505	32	1	1	0	1/1&7/1	13	\$40
	Philadelphia P F Lucehesi	3,532	3,532		23	1	0	0	7/1	1+	\$25

4. DERMATOLOGY AND SYPHILOLOGY

The following services are approved by the Council and the American Board of Dermatology and Syphilology:
(See footnotes 32 and 33)

	Chief of Service	Inpatients Treated	Service or House Cases	Outpatient Visits	Autopsies	Senior Residents	Assistant Residents	Service Begins	Length of Service	Beginning Stipend	Fellowships	Graduate Students
Los Angeles County Hospital*1 32	Los Angeles T Nisbet	502	502	39,711	4	3	0	7/1	13	\$10	0	0
University of California Hospital*1 33	San Francisco W J Kerr	30	27	9,041		1	1	7/1	1+	\$25	0	0
Georgetown University Hospital*30	Washington, D C R Eichenlaub	46	21	8,506		0	0	7/1	3	\$25	1	0
Research and Educational Hospital*31	Chicago F E Sene	47	47		2	3	0	7/1	13	\$50	0	2
University of Chicago Clinics*32	Chicago S W Becker			14,829	2	1	1	1/1&7/1	13	None	0	2
University Hospitals*1 32	Iowa City R Nomland	302	288	2,015	2	1	1	7/1	13	\$21	0	0
Massachusetts General Hospital*33	Boston C G Lane	369		54,943	7	1	1	7/1	3	None	1	0
University Hospital*1 33	Boston U Wile	770	770	9,835	4	2	2	7/1	13	\$25	0	4
City of Detroit Receiving Hospital*1 10 33	Detroit Rolt C Jameson	288	288	800		0	0	7/1	23	\$15	2	0
Minneapolis General Hospital*1 33	S F Sweltzer	307	307	21,642	1	0	0	1/1&7/1	3	\$25	2	0
University Hospitals*1 33	H I Michelson	182		10,439	7	0	0	7/1	3	\$50	1	0
Mayo Foundation 33	(See page 765)											
Barnard Free Skin and Cancer Hospital	Buffalo M F Ingman	69	69	14,925	0	1	0	7/1	13	\$25	0	0
Edward J. Meyer Memorial Hospital*33	Buffalo F D Osborne	413	413	34,373	3	1	2	7/1	34	\$25	0	2
Bellevue Hospital*1 32	New York City H Fox	1,544	1,544	46,049	18	1	2	1/1&7/1	1	\$18	0	2
Columbia Presbyterian	New York City J G Hopkins	31		20,378	2	0	0	Varies	13		1	0
New York Post Graduate and Hospital*34	New York City G M Mackee	290	164	114,543	1	1	2	1/1&7/1	2	None	0	20
Duke Hospital*1 32	Durham, N C J L Callaway	97	75	8,628	1	1	0	7/1	1	None	0	0
Cincinnati General Hospital*33	Cincinnati F B Tauler	464	464	29,976	5	1	2	7/1	12	\$25	0	0
City Hospital*32	Cleveland H N Cole	412	412	28,348	6	1	1	7/1	13	\$40	0	0
University Hospitals*33	Cleveland H N Cole	198	124	28,600	3	1	1	7/1	2	\$25	0	0
University of Oregon Medical School Hospitals and Clinics*32	Portland L B Kingery	92	92	24,603		1	2	7/1	3	\$40	0	0
Graduate Hospital of the University of Pennsylvania*1 32	F D Wedman	50	50	24,612	0	0	0	6/1	13	None	1	10
Hosp. of the Jefferson Med University of	F H Stokes	195		2,265	0	0	0	7/1	25	\$25	7	0
	F C Knowles	12		20,735	0	0	0	7/1	1	\$50	1	0
	D C Smith	571	571	17,383	6	1	1	7/1	1	\$50	0	1

The following services, approved by the Council, are now being reviewed in collaboration with the American Board of Dermatology and Syphilology

Boston City Hospital*1	Boston W P Boardman	199	199	41,420	8	1	0	Varies	1+	\$100	0	2
Kings County Hospital*	Brooklyn A Potter	721	721	24,331	3	1	0	10/1	1	\$100	0	0
Metropolitan Hospital*1	New York City V A H Cornell	384	384	18,073	1	1	0	7/1	1+	\$18	0	0
Montefiore Hospital for Chronic Diseases*1	New York City F Wise	22	10	469	1	0	0	7/1	1	\$50	1	0
New York City Hospital*	New York City A B Cannon	800	800	18,096	5	1	0	9/1	1	\$50	0	0
Skin and Cancer	Philadelphia A Strickler	176	176	54,491	2	0	0	7/1	3	\$100	0	0
Pittsburgh Skin a	Pittsburgh L Hollander			45,332								

5. EPILEPSY

	Chief of Service	Inpatients Treated	Service or House Cases	Outpatient Visits	Autopsies	Residents	Assistant Residents	Fellowships	Service Begins	Length of Service (Years)	Beginning Stipend
Monson State Hospital	Palmer, Mass M B Hodskins	1,002	87		30	1	0	0	7/1	1	None

6. FRACTURES

Denver General Hospital*11	Denver H W Wilson	381	381	4,067	46	1	0	0	7/1	12	\$50
City of Detroit Receiving Hospital*1 10	Detroit A D LaFerte	1,014	1,014	12,178	1	1	1	0	7/1	1	\$75
Presbyterian Hospital*1	New York City W Darrah	450	423	14,104	1	1	1	0	1/1&7/1	1	\$50
Rhode Island Hospital*	Providence M S Danforth	497		7,079	2	1	0	0	7/1	1	\$50

7. GYNECOLOGY

The following services accredited by the Council are fully approved by the American Board of Obstetrics and Gynecology.

Free Hospital for Women	Brookline, Mass	F A Pemberton	2,615	2,615	17,722	10	2	0	Varies	1	None
Jersey City Hospital*	Jersey City, N J		810	64	5,094	3	1	1	0	7/1	1 \$50
All any Hospital*	Albany, N Y	A J Wallingford	2,106		1,272	11	1	1	0	7/1	1 \$50
Buffalo General Hospital*	Buffalo	F C Goldsborough	1,471	1,471	214	16	1	0	0	7/1	12 \$15
Harlem Hospital*1	New York City	H C Falk	1,472	1,472	29,071	1	1	1	0	1/1&7/1	1 \$25
Mount Sinai Hospital*1 10	New York City		21,100			1	1	1	1	1/1&7/1	1 \$25
University Hospitals*1	Cleveland	W H Weir	1,241	629	9,135	6	1	3	0	7/1	2 \$50
Graduate Hospital of the University of Pennsylvania*	Philadelphia	W R Nicholson	50	505	2,023	2	1	0	0	7/1	1 None
Elizabeth Steel Magee Hospital	Pittsburgh	B Z Cashman	1,616	609	2,202	15	1	1	0	9/1	5

7. GYNECOLOGY—(Continued)

The following services, approved by the Council, are now being reviewed in collaboration with the American Board of Obstetrics and Gynecology:

		Chief of Service	Inpatients Treated	Service or House Calls	Outpatient Visits	Autopsies	Residents	Assistant Residents	Fellowships	Service Begins	Length of Service (Years)	Beginning Stipend
Hospital for Children*	San Francisco	H Stephenson	313	25	932	0	0	1	0	7/1	1	\$25
Passavant Memorial Hospital*	Chicago	A H Curtis	637	165	4,211	6	1	0	0	7/1	1	None
Indiana University Medical Center*	Indianapolis	C Habich	781	781	2,840	4	1	0	0	7/1	1	\$35
Touro Infirmary*	New Orleans	C Tyrone	1,103		4,650		1	0	0	7/1	12	\$25
Johns Hopkins Hospital*	Baltimore	R W TeLinde	2,034	1,244	18,075	12	1	4	0	7/1&9/1	16	None
University Hospital*	Baltimore	J M Hundley, Jr	781		7,290	2	1	2	0	7/1	14	None
New York Polyclinic Medical School and Hospital*	New York City		842		3,816	1	1	0	0	7/1	2	None
New York Post Graduate Medical School and Hospital*	New York City	W T Dannreuther	537	269	28,930	2	1	0	0	10/1	1	\$90
Syracuse Memorial Hospital*	Syracuse, N Y	N P Sears	720	24	1,911	1	1	0	0	7/1	1	None
Starling Loving University Hospital*	Columbus, O	F Fletcher	456		3,285	1	1	1	0	7/1	12	\$35
Woman's Hospital*	Philadelphia		382		2,041	1	1	0	0	9/1	1	\$25
St Francis Hospital*	Pittsburgh	B Z Cashman and W A Nealon	870		1,169	6	1	0	0	9/1	12	\$65
John Gaston Hospital*	Memphis Tenn	W L Williamson	897		11,930	7	1	0	0	7/1	1	\$65

8 MALIGNANT DISEASES

Albert Steiner Clinic for Cancer and Allied Diseases	Atlanta, Ga	R H Fike	2,077	2,977	46,847	31	2	0	0	7/1	1	\$75
Michael Reese Hospital *1 28	Chicago	E Uhlmann	1,777				1	0	0	7/1	13	\$25
Collis P Huntington Memorial Hospital	Boston	C C Simmons	1,491	1,491	18,987	9	1	1	1	7/1	1	\$125
New England Deaconess Hospital *	Boston	L S McKittrel	1,233		7,016	63	2	0	0	1/1&7/1	1+	\$33
Westfield State Sanatorium 1	Westfield, Mass	C Binney	755	755	6,351	64	2	0	0	Varies	1+	\$130
Pondville Hospital at Norfolk	Wrentham, Mass	E M Daland	1,627		7,478	101	9	0	0	Varies	1 1/4	\$150
Elmore Hospital and Infirmary *1	Elmore, Mich		468	468	625	138	1	0	0	7/1	1	\$67
Barnard Free Skin and Cancer Hospital	St Louis	F J Taussig and W E Leighton	1,135	1,135	27,504	14	2	0	1	7/1	1	\$35
Jersey City Hospital *	Jersey City, N J		614	553	4,825	17	1	0	0	7/1	1+	\$75
Brooklyn Cancer Institute	Brooklyn	W E Howes	1,038	1,038	8,764	53	6	0	0	3/1, 7/1	11/1	\$75
Meadowbrook Hospital *	Hempstead, N Y	A C Martin	447		3,943	35	1	0	0	7/1	1	\$75
Memorial Hospital for the Treatment of Cancer and Allied Diseases	New York City	C P Rhoads	4,210		54,067	90	4	12	13	1/1&7/1	12	\$15
New York City Cancer Institute Hospital *	New York City	M Lenz	980	980	9,418	8	0	0	0	1/1&7/1	1	\$30
Duke Hospital *1	Durham, N C	R Jones	1,381	921	1,760	56	1	1	0	7/1	3	None
American Oncologic Hospital	Philadelphia	G M Dorrance	556	532	7,237	22	4	0	1	7/1	13	\$100
Jeanes Hospital 1	Philadelphia	R W Leahan	620	670	7,551	33	2	0	0	7/1	13	\$30

9. MEDICINE

Revision of list is now taking place in collaboration with the American Board of Internal Medicine and the American College of Physicians

Hillman Hospital*	Birmingham, Ala	J S McLester and H R Carter	2,467	2,467	21,746	79	2	0	0	7/1	1	\$30
Employees' Hospital of the Tennessee Coal, Iron and Railroad Company*	Fairfield, Ala	G F Walsh	1,985	1,985	16,606	44	2	0	0	7/1	1	\$150
Baptist State Hospital*	Little Rock, Ark	J N Compton	1,805		164	20	1	0	0	7/1	1	\$100
General Hospital of Fresno County*	Fresno, Calif	W E Schottstaedt	2,508	2,508	33,389	132	1	0	0	7/1	1	\$75
Cedars of Lebanon Hospital*	Los Angeles		2,011		575	20,311	31	1	0	7/1	1	\$75
Los Angeles County Hospital*1	Los Angeles	F R Ware	8,048	8,048	64,062	794	18	0	0	7/1	3	\$10
White Memorial Hospital*	Los Angeles	W L Macpherson	1,401		27,187	34	2	0	0	7/1	13	\$80
Highland Alameda County Hospital*1	Oakland, Calif	R T Sutherland and H G McLean	2,688	2,688		226	1	2	0	7/1	13	\$40
Collis P and Howard Huntington Memorial Hospital*	Pasadena, Calif	W J Stone	450		76	6,441	51	1	0	7/1	1	\$100
San Diego County General Hospital*	San Diego, Calif	C L Stealy	6,511	6,511	20,320	132	2	0	0	7/1	1	\$115
Hospital for Children*	San Francisco	D Atkinson	605		3,161	0	1	0	0	7/1	1	\$25
Mount Zion Hospital*	San Francisco	L H Briggs	832		326	15,701	61	1	2	6/15	1	\$30
St Luke's Hospital*	San Francisco	H P Hill	1,802	1,802	3,783	65	1	2	0	7/1	1	\$75
San Francisco Hospital*1	San Francisco	L H Briggs and G D Barnett	3,405	3,405		6	0	0	0	7/1	1	\$30
Stanford University Hospitals*1	San Francisco	A Bloomfield	2,047	910	23,210	58	1	6	0	7/1	12	\$25
University of California Hospital*1	San Francisco	W J Kerr	1,549	910	30,533	58	1	5	0	8/1	1+	\$35
Santa Clara County Hospital*	San Jose, Calif	G Gray	2,304	2,304	26,940	125	1	0	0	7/1	1	\$75
Fairmont Hospital of Alameda County*	San Leandro, Calif	R T Sutherland and H G MacLean	2,056	2,056		159	1	2	0	7/1	1	\$10
Colorado General Hospital*13	Denver	J J Waring	852		25,827	87	1	1	0	8/1	2	\$10
Denver General Hospital*	Denver	M Katzman	1,355	1,515	1,633	108	2	0	0	7/1	12	\$30
Grace Hospital*	New Haven, Conn	S I Goldberg	1,601		2,866	44	1	0	0	7/1	3	\$90
New Haven Hospital*1	New Haven, Conn	F G Blake	2,473		19,070	151	1	4	0	1/1&7/1	1+	\$30
Central Dispensary and Emergency Hosp*	Washington, D C	H M Kaufman	1,732		6,501	56	1	1	0	6/15	12	\$10
Freedmen's Hospital*	Washington, D C	J L Hall	1,045	786	29,804	48	1	2	0	7/1&10/1	12	\$10
Gallinger Municipal Hospital*1	Washington, D C	W M Yater	2,792	2,792	1,150	160	2	3	0	7/1	1	\$25
Garfield Memorial Hospital*1	Washington, D C	J B Glenn	2,318	985	1,815	90	1	1	0	7/1	12	\$30
Georgetown University I		W M Yater	1,177	444	11,363	55	0	6	6	7/1	1	\$30
Duval County Hospital*		L Limbaugh	899	879		166	1	2	0	7/1	1	\$30
James M Jackson Memo			4,151		15,709	97	1	1	0	7/1	1	\$75
Grady Hospital*			3,117	3,117	62,305	234	2	2	0	7/1	1+	\$30
St Joseph Infirmary*1		J Hines	1,075	450	650	10	1	0	0	7/1	1	\$75
University Hospital*1	Augusta, Ga	V P Sydenstricker	1,892		3,869	51	1	2	0	7/1	12	\$10
Emory University Hospital*	Emory University, Ga	C W Strickler	1,589	486		51	0	1	0	7/1	12	\$30
Cook County Hospital*	Chicago	C C Maher	20,417	20,417	32,493	561	27	0	2	1/1&7/1	13	\$35
Mercy Hospital of La University Clinics*	Chicago	I F Vollni	1,377	107	24,873	34	1	0	0	7/1	12	\$30
Michael Reese Hospital*1	Chicago	W Brams	2,667	798	2,996	88	2	0	0	1/1&7/1	12	\$30
Mount Sinai Hospital*1	Chicago		1,491	378	20,842	60	1	0	0	7/1	1	\$30
Norwegian American Hospital*1	Chicago	D I Markson	1,333	22		41	1	0	0	7/1	1	\$35
Passavant Memorial Hospital*1	Chicago	W H Holmes	1,646	226	36,979	47	3	0	3	1/1&7/1	1	None
Presbyterian Hospital*	Chicago		3,666	162		51	3	0	0	7/1	13	\$30
Provident Hospital*1	Chicago	A F Connor	579		21,210	18	1	0	1	7/1	13	\$30
Research and Educational Hospital*	Chicago	R W Keeton	437			41	3	0	0	7/1	13	\$30
St Luke's Hospital*	Chicago	A R Elliott	2,360	384	13,581	75	1	2	0	7/1	13	\$35
University of Chicago Clinics*1	Chicago	G F Dick	2,275	2,275	37,963	87	1	4	13	7/1	1	None
Wesley Memorial Hospital*1	Chicago	A A Goldsmith	511			17	1	0	1	7/1	12	\$35
Langston Hospital*	Ft. Langston Ill	L D Snorf	2,719		11,781	71	1	0	0	7/1	1	\$30
St Francis Hospital*	Ft. Langston Ill	R W Keeton	471			82	1	0	0	7/1	1	\$35
Indianapolis City Hospital*1	Indianapolis	C I Clark	2,711	2,711	59,661	14	2	0	5	7/1	13	\$35
Indiana University Medical Center*1	Indianapolis	O I Ritchey	1,647	1,647	5,885	74	2	2	0	7/1	1	\$35
University Hospitals*1	Iowa City	J M Smith	2,114	2,005	3,490	68	1	3	0	7/1	16	\$35

9. MEDICINE—(Continued)

		Chief of Service	Inpatients Treated	Service or House Calls	Outpatient Visits	Autopsies	Residents	Assistant Residents	Fellowships	Service Begins	Length of Service (Years)	Beginning Stipend	
University of Kansas Hospitals *	Kansas City, Kan	R H Major	1,093		11,200	6	1	2	0	7/1	13	\$30	
Louisville City Hospital *	Louisville, Ky	J W Moore	2,000	2,000	49,370	94	2	8	0	7/1	13	\$14	
Charity Hospital *	New Orleans		11,141	11,141	90,178	544	15	8	0	7/1	14	\$25	
Touro Infirmary *	New Orleans	R Lyons	1,800		24,303	68	3	0	0	7/1	1	\$25	
Baltimore City Hospitals *	Baltimore	J T King, Jr	3,128	3,128		276	1	5	0	7/1	1	\$12	
Church Home and Infirmary *	Baltimore	Z R Morgan	672	187	921	22	1	0	0	7/1	1	\$25	
Hospital for Women *	Baltimore	W Baetjer	420	114	2,410	4	1	1	0	7/1	1	\$20	
Johns Hopkins Hospital *	Baltimore	W T Longcope	4,340	1,804	96,458	175	1	6	0	7/1&9/1	18	None	
Maryland General Hospital *	Baltimore	E B Freeman	942	106	1,403	28	1	3	0	7/1	12	\$25	
Mercy Hospital *	Baltimore	M C Pincocks	1,416		2,780	53	1	0	0	7/1	2	\$25	
Provident Hospital and Free Dispensary *	Baltimore	I B Jarrett	387	370	577	10	1	1	0	10/10	12	\$25	
St Agnes Hospital	Baltimore	J O Mara	800	344	1,907	13	1	0	0	7/1	12	None	
St Joseph's Hospital *	Baltimore	R Hussey	900		4,390	30	1	2	0	7/1	23	\$10	
Sinal Hospital *	Baltimore	C R Austrian	1,439	370	13,007	50	1	2	0	7/1	1	\$20	
South Baltimore General Hospital *	Baltimore	G McLean	545		3,774	23	1	1	0	7/1	12	\$25	
Union Memorial Hospital *	Baltimore	W Baetjer	1,593		4,697	12	1	4	0	7/1	14	\$40	
University Hospital *	Baltimore	M C Pincocks	1,500		7,360	61	1	4	0	7/1	14	None	
West Baltimore General Hospital *	Baltimore	L Krause	637	183	886	22	2	0	0	7/1	2	\$20	
Beth Israel Hospital *	Boston	H Linenthal	1,916	900	11,119	63	1	0	0	7/1	12	\$79	
Boston City Hospital *	Boston	G R Minot	11,822	11,822	42,308	681	6	8	10	Varies	14	\$12	
Joseph H Pratt Diagnostic Hospital	Boston	J H Pratt	7,550	905		10	5	0	0	7/1	12	\$12	
Lahey Clinic	Boston	L W Hurthall and F N Allen	3,000	3,000	30,000	0	0	16	0	1/1&7/1	12	\$100	
Massachusetts General Hospital *	Boston	J H Means	4,013		72,091	93	1	5	0	9/1	13	\$12	
Massachusetts Memorial Hospitals *	Boston	C S Keefer	1,186		4,732	30	1	4	0	7/1	1	\$12	
Peter Bent Brigham Hospital *	Boston	S Weiss	2,01		41,147	141	1	6	0	1/1&7/1	13	\$12	
Worcester City Hospital *	Worcester, Mass	R W Schofield	2,693		11,023	103	1	0	0	1/1	1	\$15	
University Hospital *	Ann Arbor, Mich	C O Sturge	3,400		19,500	121	7	8	0	7/1	13	\$15	
Alexander Blain Hospital	Detroit	R L Fisher	394			8	1	0	0	7/1	12	\$75	
City of Detroit Receiving Hospital *	Detroit	G B Myers	3,446	3,446	14,008	340	1	6	1	7/1	12	\$75	
Grace Hospital *	Detroit	G B Hoops	3,047	914	10,519	97	1	1	0	7/1&9/1	2	\$50	
Harper Hospital *	Detroit	H A Freund	2,692	270			1	6	0	7/1	13	\$25	
Henry Ford Hospital *	Detroit	J Sladen	4,467		79,815	95	12	14	2	9/1	15	\$100	
Providence Hospital *	Detroit	H Schmidt	1,475			119	1	0	0	7/1	1	\$100	
Flores Hospital and Infirmary *	Liaise, Mich	W R McQuiggan	2,710		64,034	187	5	6	2	7/1	15	\$50	
Hurley Hospital *	Flint, Mich	M S Chambers	1,500	83		67	1	0	0	7/1	1	\$12	
Butterworth Hospital *	Grand Rapids, Mich	J Baker	1,241	109		53	1	0	0	7/1	1	\$100	
Minneapolis General Hospital *	Minneapolis	G Fahr	2,608	2,608	25,584	180	0	0	6	1/1&7/1	13	\$25	
University Hospitals *	Minneapolis	C J Watson	1,209		29,640	68	0	0	6	7/1	3	\$50	
Mayo Foundation	Rochester, Minn	(See page 783)											
Acker Hospital *	St Paul, Minn	A R Hall and A Hoff	1,032	1,032	29,029	201	6	0	0	7/1	1	\$50	
St Louis County Hospital *	Clayton, Mo	H S Liggett	1,691	1,691	28,218	69	1	1	0	7/1	12	\$50	
Kansas City General Hospital *	Kansas City, Mo	J V Bell	2,419	2,419	20,290	200	3	0	0	7/1	2	\$50	
St Joseph Hospital *	Kansas City, Mo	H L Jones	1,358			77	1	0	0	7/1	13	\$50	
St Mary's Hospital *	Kansas City, Mo	P F Stookey	1,698	426		71	1	0	0	7/1	1	\$50	
Burnes Hospital *	St Louis	D P Barr	3,805		24,004	119	1	3	1	7/1	13	\$15	
De Paul Hospital *	St Louis	L P Buddy	1,496		961	38	1	1	0	7/1	12	\$50	
Hoover G Phillips Hospital *	St Louis	L Gottlieb	2,126	2,126	21,213	92	3	2	0	7/1	13	\$75	
Jewish Hospital *	St Louis	L Sale	2,690		582	10,808	52	1	2	0	7/1	14	\$15
St Louis City Hospital *	St Louis	T Findley	3,722	3,722	24,030	362	0	6	0	7/1	12	\$50	
St Luke's Hospital *	St Louis	A B Day	1,024		6,659	34	0	1	0	7/1	1	\$50	
St Mary's Group of Hospitals *	St Louis	R A Kinsella	2,767	1,121	52,761	12	0	0	6	7/1	3	\$15	
Creighton Memorial St Joseph's Hospital *	Omaha	A Saelis	1,465		315	193	36			7/1	12	\$15	
Jersey City Hospital *	Jersey City, N J		4,867	4,797	10,329	160	1	2	0	1/1&7/1	14	\$75	
Albany Hospital *	Albany, N Y	L W Gorham	1,706		670	6,094	90	1	1	7/1	1	\$15	
Cooley Island Hospital *	Brooklyn	P I Nash	1,400	1,463	20,975	54	1	0	0	7/1	1	\$100	
Cumberland Hospital *	Brooklyn	H Joehann	1,003	1,003	50,838	69	1	1	0	1/1&7/1	1	\$18	
Jewish Hospital *	Brooklyn	S R Blattes	1,782	1,176	21,518	84	2	0	0	7/1	1	\$15	
Kings County Hospital *	Brooklyn	J Crawford and H Moser	17,700	17,700	100,490	470	4	4	0	1/1&7/1	12	\$18	
Long Island College Hospital *	Brooklyn	T Howard	1,463	907	20,901	61	1	2	0	7/1	14	\$15	
Norwegian Lutheran Deaconesses' Home and Hospital *	Brooklyn	B A Fedde and H Giesel	610		421		1	0	0	7/1	1	None	
Buffalo General Hospital *	Buffalo	A H Aaron	2,438	1,071	3,47	121	1	7	0	7/1	12	\$15	
Edward J Meyer Memorial Hospital *	Buffalo	D K Miller	2,437	2,437	33,490	142	2	6	0	7/1	3-6	\$15	
William Fillmore Hospital *	Buffalo	J H Mesner	1,083	1,00	2,310	20	1	0	0	7/1	1	\$15	
Mary Imogene Bassett Hospital *	Cooperstown, N Y	G M Mackenzie					1	0	0	7/1	1	\$12	
Mendowbrook Hospital *	Hempstead, N Y	F C Jessup	2,234	2,234		152	1	0	0	7/1	1	\$20	
Queens General Hospital *	Jamaica, N Y	A W Victor	2,284	2,284	37,719	211	1	1	0	7/1	1	\$18	
Charles S Wilson Memorial Hospital *	Johnson City, N Y	J M Jones	1,106			54				7/1	12	\$50	
New Rochelle Hospital *	New Rochelle, N Y	C Read	1,230		1,533	49	1	0	0	7/1	1	\$15	
Bellevue Hospital *	New York City		10,847	10,817	110,767	177	4	0	0	1/1&7/1	1	\$15	
Flower and Fifth Avenue Hospitals *	New York City	L J Boyd	1,050	55	5,085	18	1	0	0	7/1	1	\$15	
Metropolitan Hospital *	New York City	L J Boyd	3,415	3,415	46,672	100	2	0	0	7/1	14	\$100	
Montefiore Hospital for Chronic Diseases *	New York City	L Lichtwitz	491	147	3,402	70	1	3	1	1/1	1	\$15	
Mount Sinai Hospital *	New York City				02,906		1	1	0	1/1&7/1	1	\$15	
New York City Hospital *	New York City	J Carroll and W L Whittemore	2,991	2,991	24,510	172	2	0	0	7/1	1	\$15	
New York Hospital *	New York City	F F Du Bois	1,448	1,448	69,992	80	1	8	0	7/1	13	\$15	
New York Infirmary for Women and Children *	New York City	M Manter	391	250	9,447	7	1	0	0	7/1	1	\$15	
New York Polyclinic Medical School and Hospital *	New York City		909		10,618	14	1	0	0	7/1	2	None	
New York Post Graduate Medical School and Hospital *	New York City	I S Wright	1,821	482	55,660	70	1	1	0	7/1	1	\$15	
Presbyterian Hospital *	New York City	W W Palmer	4,011	1,709	69,638		1	3	0	7/1	1	\$12	
Welfare Hospital for Chronic Diseases *	New York City		1,805	1,805	47	126	7	11	0	7/1	14	\$15	
Genesee Hospital *	Rochester, N Y	D B Jewett	1,141	410	5,509	25	1	0	0	7/1	1	\$15	
Rochester General Hospital *	Rochester, N Y	C P Thomas	1,116	799	5,331	66	1	1	0	7/1	1	\$15	
Strong Memorial and Rochester Municipal Hospitals *	Rochester, N Y	W S McCann	2,403	2,356	27,005	24	3	5	0	7/1	14	\$12	
Hospital of the Good Shepherd *	Syracuse, N Y	F C Reifenshtein, Sr	1,195	747		52	1	1	0	7/1	1	\$12	
Grassland Hospital *	Valhalla, N Y	M D Touart	894	894	6,406	77	1	1	0	7/1	12	\$15	
Duke Hospital *	Durham, N C	F M Hanes	4,120	1,927	28,156	77	1	1	20	7/1	23	None	
Watts Hospital *	Durham, N C	W R Stanford	2,200	291	4,474	26	0	1	0	7/1	1	\$15	
City Hospital *	Winston-Salem, N C	C F Pfoll	1,567	660	5,045	61	2	0	0	7/1	12	\$15	
Trinity Hospital *	Winnet, N D	P H Rowe	1,011			64	1	0	0	7/1	2	\$15	
City Hospital *	Akron, O		1,560		8,216	64	1	0	0	7/1	2	\$15	
Mercy Hospital *	Canton, O	J D O'Brien	1,821	229		49	1	0	0	7/1	1	\$15	
Christ Hospital *	Cincinnati	J L Tuechter	1,914	241	1,173	46	2	0	0	7/25	1	\$15	

9. MEDICINE—(Continued)

		Chief of Service	Inpatients Treated	Service or House Calls	Outpatient Visits	Autopsies	Residents	Assistant Residents	Fellow- ships	Service Begins	Length of Service (Years)	Beginning Stipend
Cincinnati General Hospital* ¹	Cincinnati	M. A. Blankenhorn	2,537	2,537	40,551	371	1	13	8	7/1	1-3+	\$75
Deaconess Hospital*	Cincinnati	F. C. Theiss	2,534	144	.....	271	1	0	0	7/1	1	\$75
Good Samaritan Hospital*	Cincinnati	G. Topmoeiler	4,452	1,558	506	116	2	0	0	7/1	1	\$25
Jewish Hospital* ^{1,15}	Cincinnati	W. Stix	2,163	508	.....	44	2	0	0	7/1	1-2	\$25
City Hospital*	Cleveland	R. W. Scott	2,364	2,364	37,931	239	2	10	0	7/1	1-3	\$10
Cleveland Clinic Foundation Hospital	Cleveland	R. L. Haden	2,363	.....	.....	21	0	0	16	7/1	1-3	\$25
Mount Sinai Hospital* ¹	Cleveland	S. S. Berger	1,857	377	22,432	52	1	0	0	7/1	1	\$20
St. Alexis Hospital*	Cleveland	H. V. Paryzek	1,917	310	11,162	25	1	0	0	7/1	1	\$25
St. John's Hospital*	Cleveland	C. E. Steyer	1,785	.....	.....	32	1	0	0	7/1	1-2	\$20
St. Luke's Hospital*	Cleveland	C. T. Way	2,424	444	4,440	76	1	1	0	6/25	2	\$50
St. Vincent Charity Hospital*	Cleveland	F. C. Oldenburg	2,051	.....	17,026	67	1	0	0	7/1	1-2	\$50
University Hospitals*	Cleveland	J. T. Wearn	4,156	1,593	32,651	179	1	11	4	7/1	2	\$25
St. Francis Hospital*	Columbus, O.	L. H. Van Buskirk	771	617	.....	74	1	0	0	7/1	1-2	\$25
Starling-Loving University Hospital* ¹	Columbus, O.	C. A. Doan	1,166	.....	23,502	62	2	1	1	7/1	1-4	\$25
Miami Valley Hospital*	Dayton, O.	W. Bryant	2,876	563	.....	97	1	0	0	7/1	1+	\$75
Huron Road Hospital*	East Cleveland, O.	A. B. Schneider	1,107	65	4,456	49	2	0	0	7/1	1-2	\$40
Lucas County General Hospital*	Toledo, O.	N. Morris	1,842	.....	34,219	128	1	0	0	7/1	1	\$75
St. Vincent's Hospital*	Toledo, O.	C. W. Waggoner	1,671	316	15,260	77	1	0	0	7/1	1-3	\$100
St. Elizabeth's Hospital*	Youngstown, O.	A. M. Rosenblum	1,959	.....	859	59	1	0	0	7/1	1	\$75
Youngstown Hospital*	Youngstown, O.	W. H. Bunn	2,992	318	1,000	74	1	0	0	7/1	1	\$50
St. Anthony Hospital*	Oklahoma City	P. M. McNeill	1,581	149	.....	40	1	0	0	7/1	1	\$50
University Hospitals*	Oklahoma City	G. A. Lamotte	848	790	14,428	45	1	1	0	7/1	1-2	\$50
University of Oregon Medical School Hos- pitals and Clinics*	Portland, Ore.	L. Selling	2,820	2,820	28,315	184	1	2	0	7/1	3	\$40
Abington Memorial Hospital*	Abington, Pa.	G. M. Piersol	1,367	.....	1,786	65	1	0	0	7/1	1	\$25
George F. Geisinger Memorial Hospital*	Danville, Pa.	W. J. Stainsby	1,608	.....	6,052	56	1	0	0	7/1	1	\$50
Germantown Dispensary and Hospital*	Philadelphia	.....	1,532	1,144	17,514	46	1	0	0	8/1	1-3	\$130
Graduate Hospital of the University of Pennsylvania*	Philadelphia	G. M. Piersol	1,104	1,104	20,513	55	1	0	0	7/1	1	None
Hahnemann Hospital*	Philadelphia	G. H. Wells	1,425	.....	12,592	80	0	1	0	9/1	2	\$50
Hospital of the University of Pennsylvania*	Philadelphia	O. H. P. Pepper	1,969	.....	23,037	66	1	0	5	7/1	1+	None
Jefferson Medical College Hospital* ¹²	Philadelphia	H. A. Reimann and H. K. Mohler	2,433	.....	37,554	129	1	0	2	9/1	1	\$50
Jewish Hospital* ¹	Philadelphia	E. A. Heller	1,830	.....	5,214	160	1	0	0	6/15	1-2	None
Mount Sinai Hospital* ¹	Philadelphia	A. I. Rubenstein and A. Trasoff	1,516	883	16,079	31	1	1	0	7/15	2-3	\$25
Pennsylvania Hospital*	Philadelphia	D. L. Farley and G. G. Duncan	1,562	1,245	10,041	113	2	0	0	7/1&9/1	1-3	\$20
Presbyterian Hospital*	Philadelphia	.....	1,423	1,028	3,374	113	1	0	0	7/1	1-2	None
Temple University Hospital* ¹	Philadelphia	C. L. Brown	1,423	1,423	8,457	46	3	0	0	9/1	3	\$40
Woman's Hospital* ²	Philadelphia	.....	617	.....	3,601	11	1	0	0	9/1	1	\$25
Allegheny General Hospital*	Pittsburgh	E. W. Willetts	1,591	802	12,601	76	1	0	0	9/1	1	\$25
Elizabeth Steel Magee Hospital	Pittsburgh	J. D. Heard	1,274	570	630	30	1	1	0	9/1	2	\$83
Mercy Hospital*	Pittsburgh	W. W. G. Maehlehan	2,627	.....	.....	55	1	0	2	0/1	1	\$112
St. Francis Hospital*	Pittsburgh	A. W. Sherrill and F. B. Utley	1,582	.....	2,496	53	1	1	0	9/1	1-2	\$25
Reading Hospital*	Reading, Pa.	W. S. Bertolet	853	345	1,436	100	1	0	0	9/1	1	\$83
Robert Packer Hospital*	Sayre, Pa.	S. D. Conklin	2,027	1,952	9,790	58	0	0	0	9/1	1	\$50
Roper Hospital*	Charleston, S. C.	R. Wilson	1,502	1,394	18,233	76	1	2	1	7/1	1-3	\$10
John Gaston Hospital*	Memphis, Tenn.	C. H. Sanford	3,017	.....	21,612	102	1	2	0	7/1	1	\$33
George W. Hubbard Hospital of Meharry Medical College*	Nashville, Tenn.	E. L. Turner	548	.....	5,281	24	1	0	0	7/1	2	\$75
Nashville General Hospital*	Nashville, Tenn.	O. X. Bryan	1,269	1,213	15,900	89	1	3	0	7/1	1-2	\$35
Vanderbilt University Hospital* ¹	Nashville, Tenn.	H. J. Morgan	1,782	897	42,560	77	1	4	0	7/1	1+	\$25
Daylor University Hospital*	Dallas, Tex.	H. M. Wilms	2,769	288	5,591	37	1	1	1	7/1	1-2	\$38
Parkland Hospital* ¹	Dallas, Tex.	W. G. Reddick	2,029	.....	16,553	60	4	0	0	1/1&7/1	2	\$25
John Sealy Hospital* ¹	Galveston, Tex.	C. T. Stone	1,619	.....	13,749	20	1	3	0	7/1	1-3	\$25
Jefferson Davis Hospital* ¹	Houston, Tex.	A. L. Miller	2,274	2,274	17,427	117	1	0	0	7/1	1	\$50
Mary Fletcher Hospital*	Burlington, Vt.	C. H. Beecher	844	.....	.....	23	1	0	0	7/1	1	\$150
University of Virginia Hospital*	Charlottesville	E. M. Landis	2,383	.....	7,295	53	1	1	0	7/1	1	\$50
Chesapeake and Ohio Hospital	Clifton Forge, Va.	G. S. Hartley	1,640	.....	6,500	14	1	0	0	7/1	1-2	\$70
Norfolk General Hospital*	Norfolk, Va.	.....	2,563	.....	2,674	47	1	0	0	7/1	1-2	\$50
Medical College of Virginia, Hospital Div.	Richmond	W. R. Porter	2,880	.....	65,733	104	2	3	0	7/1	1	\$25
King County Hospital* ^{1,15}	Seattle	C. E. Wattle	2,268	2,268	95,904	210	1	0	0	7/1	1	\$125
State of Wisconsin General Hospital* ¹	Madison	W. S. Middleton	3,975	.....	19,574	70	4	11	1	7/1	3	\$25
Columbia Hospital*	Milwaukee	J. J. Pink	760	.....	.....	23	1	0	0	7/1	3-4	\$25
St. Joseph's Hospital*	Milwaukee	F. D. Murphy	1,788	1,788	.....	45	1	0	0	6/15	1+	\$25
Milwaukee County Hospital* ¹	Wauwatosa, Wis.	F. D. Murphy	5,399	5,399	48,861	227	4	6	0	7/1&7/15	1-3	\$50
Queen's Hospital*	Honolulu, T. H.	N. P. Larsen	8,501	.....	.....	..	1	0	0	1/1	1	\$90

10. MIXED

(In addition to the hospitals listed below, all hospitals approved for intern training are likewise
accredited for mixed residencies.)

Baptist Hospitals	Birmingham, Ala.	C. F. Lewis	5,823	317	210	48	4	0	0	7/1	1	\$125
St. Vincent's Hospital	Birmingham, Ala.	U. J. W. Peters	4,011	98	.....	28	4	0	0	7/1	1	\$75
St. Margaret's Hospital	Montgomery, Ala.	J. H. Blue	4,776	.....	.....	39	3	0	0	7/1	1	\$75
St. Mary's Hospital and Sanatorium	Tucson, Ariz.	J. B. Littlefield and D. F. Hill	3,832	.....	.....	40	2	0	0	7/1	1	\$150
Leo N. Levi Memorial Hospital	Hot Springs National Park, Ark.	D. C. Lee	1,332	1,332	21,578	13	2	0	0	7/1	1	\$60
Paradise Valley Sanitarium and Hospital ¹	National City, Calif.	C. E. Nelson	1,955	1,341	12,374	21	1	0	0	11/1	1	\$110
St. Joseph's Hospital ¹	San Francisco	R. H. Parkinson	6,017	81	.....	41	1	3	0	7/1	1-2	\$75
Sonoma County Hospital ¹	Santa Rosa, Calif.	C. M. Fleissner	2,966	2,966	3,926	87	6	0	0	7/1	1	\$100
St. Mary Hospital	Pueblo, Colo.	J. F. Snedee	2,673	.....	.....	45	1	0	0	7/1	1	\$70
Doctors Hospital	Washington, D. C.	C. S. White	5,030	.....	50	65	4	5	0	7/1	1	\$25
Riverside Hospital	Jacksonville, Fla.	T. Z. Casn	1,597	1,345	8,956	10	1	0	0	7/1	1	\$70
St. Anthony's Hospital ¹	Rock Island, Ill.	E. F. Condon	2,320	325	1,401	50	1	0	0	7/1	1	..
Lafayette Home Hospital	Lafayette, Ind.	I. Cole	3,684	.....	.....	31	1	0	0	7/1	1	\$85
St. Elizabeth Hospital	Lafayette, Ind.	R. A. Fleck	4,759	228	.....	44	4	0	0	7/1	1	\$75
St. Luke's Methodist Hospital	Cedar Rapids, Ia.	E. H. Files	4,284	.....	.....	57	1	0	0	7/1	1	\$125
Bethany Hospital ¹	Kansas City, Kan.	W. H. Agle	3,201	.....	.....	32	2	0	0	7/1	1	\$170
Jewish Hospital	Louisville, Ky.	J. W. Heim	1,775	133	.....	13	2	0	0	7/1	1	\$50
Flint-Goodridge Hospital of Dillard Uni- versity ¹	New Orleans	.....	1,878	.....	20,922	11	4	0	0	7/1	1	\$70
Long Island Hospital	Boston	J. R. Cunningham	1,083	1,083	.....	100	2	10	0	Varies	1	\$100
Framingham Union Hospital	Framingham, Mass.	J. C. Merriam	3,063	763	.....	49	2	0	0	7/1	1	\$42
Malden Hospital ¹	Malden, Mass.	I. J. Walker	4,701	1,465	.....	60	3	0	0	7/1	1½	\$10
St. Joseph's Mercy Hospital	Ann Arbor, Mich.	G. F. Muehlig	3,230	166	20,628	61	2	0	0	7/1	1	\$100
Charles Godwin Jennings Hospital	Detroit	A. F. Jennings	1,748	.....	.....	19	2	0	0	7/1	1	\$51

10. MIXED—(Continued)

		Chief of Service	Inpatients treated	Service or House Cases	Outpatient Visits	Autopsies	Residents	Assistant Residents	Fellow- ships	Service Begin	Length of Service (Years)	Beginning Stipend
Parkside Hospital	Detroit	S H C Owen	1,039	773	446	25	3	0	0	7/1	1	\$75
Mercy Hospital	Muskegon, Mich	G Le Ferre	2,932		1,361	10	2	0	0	7/1	1	\$100
St Joseph Mercy Hospital	Pontiac, Mich		5,067		1,064	84	4	0	0	7/1	1	\$100
Eitel Hospital	Minneapolis	A C Straehauer	5,474			32	2	0	0	7/1	1	\$100
Fairview Hospital	Minneapolis	M P Baken	4,364		1,223	34	3	0	0	7/1	1	\$100
Lutheran Deacons Home and Hospital	Minneapolis	C R Wall	4,151			47	1	0	0	7/1	1	\$100
Midway Hospital	St Paul	G Earl	5,278		2,164	70	3	0	0	7/1	12	\$100
Northern Pacific Beneficial Association Hos- pital	St Paul	A W Ide	2,561		13,103	23	2	0	0	Varies	1	\$10
Christian Hospital	St Louis	G A McIlhes	2,042			22	2	0	0	7/1	1	\$70
Douglas County Hospital	Omaha		3,049	3,049	5,231	99	3	0	0	7/1	6/30	\$75
Elliot Hospital	Manchester, N H	D W Parker	2,188	547	2,019	56	3	0	0	7/1	1	\$75
Auburn City Hospital	Auburn, N Y	R C Almy	5,304	1,061	7,766	40	2	0	0	7/1	1	\$75
Jewish Sanitarium and Hospital for Chronic Diseases	Brooklyn	A M Rablner	638	638		43	4	3	0	1/1	1 1/2	\$50
Kingston Hospital	Kingston, N Y	F A Johnston	3,120	374		53	2	0	0	7/1	1	\$50
Richmond Memorial Hospital	Staten Island, N Y	M S Lloyd	2,095	1,446	3,553	40	4	0	0	Quart	1	\$50
Highsmith Hospital	Fayetteville, N C	W T Rainey	3,056		3,294	30	3	0	0	7/1 & 9/1	1	
St Agnes Hospital	Raleigh, N C	H A Royster	1,420	1,065	4,148	28	3	0	0	7/1 & 9/1	1	\$15
Park View Hospital	Rocky Mount, N C	E S Boice	2,653	929	15,111	29	1	0	0	7/1	1	\$50
St John's Hospital	Fargo, N D	O A Sedlak	3,863		1,272	39	3	0	0	7/1	1	\$75
Glenville Hospital	Cleveland	J B Price	3,450		5,569	48	2	0	0	7/1	1	\$50
Grant Hospital	Columbus, O	H A Baldwin	6,095	492	1,825	42	3	0	0	7/1	1	\$100
Mansfield General Hospital	Mansfield, O	D C Lavender	4,618	1,432	495	34	1	0	0	7/1	1	\$100
Hillcrest Memorial Hospital	Tulsa, Okla	R A McGill	4,135			42	2	0	0	7/1	1	\$100
St Margaret Memorial Hospital	Pittsburgh	B R Almquest	2,474		7,574	35	3	0	0	Varies	1+	\$100
Medical Arts Hospital	Dallas, Tex	C Roscoe	4,485			5	2	0	0	7/1	1	\$100
St Mary's Infirmary	Galveston, Tex	F A Garbade	3,431	506	4,336	72	1	0	0	7/1	1	\$50
Methodist Hospital	Houston, Tex	J C Dickson	3,778	203	1,642	63	4	0	0	7/1	1	\$50
Wichita Falls Clinic Hospital	Wichita Falls, Tex	Q B Lee	2,909		642	15	3	0	0	7/1	1	\$50
Elizabeth Buxton Hospital	Newport News, Va	R Buxton	2,906	299	15,852	59	3	0	0	7/1	1	\$50
Grace Hospital	Richmond, Va	A L Herring	3,683			17	4	0	0	7/1	1	\$50
St Elizabeth Hospital	Richmond, Va	J S Horsley	1,547		5,317	36	1	0	0	7/1	1 1/2	\$100
St Luke's Hospital	Richmond, Va	S McGuire	2,518			8	3	0	0	7/1	1	\$75
McMillan Hospital	Charleston, W Va	J R Hunter	2,652	796	2,450	15	2	0	0	7/1	1	\$50
St Francis Hospital	Charleston, W Va	R B Price	2,820	350	690	17	4	0	0	7/1	1	\$75
Camden Clark Memorial Hospital	Parkersburg, W Va	A C Woolter	2,888	378		44	3	0	0	7/1	1	\$75
Mercy Hospital	Janesville, Wis	R Farnsworth	2,266			54	1	0	0	7/1	1	\$75
La Crosse Lutheran Hospital	La Crosse, Wis	A Gundersen	2,174		1,078	34	1	0	0	7/1	1	\$50

11. NEUROLOGY

Revision of list is now taking place in collaboration with the American Board of Psychiatry and Neurology

			1,000	1,000	3,934	196	1	0	0	7/1	2	\$10
Los Angeles County Hospital *1	Los Angeles	S Ingham	1,000	1,000	3,934	196	1	0	0	7/1	2	\$10
Gallinger Municipal Hospital *2	Washington, D C	W Freeman and J W Watts	178	178		10	1	0	0	7/1	1	\$75
University of Chicago Clinics *2	Chicago	P C Buey			3,358	14	0	1	1	7/1	3	\$75
University Hospitals *1	Iowa City	C Van Epps	767	729	1,302	16	1	1	0	7/1	16	\$75
Boston City Hospital *1	Boston	H H Merritt	460	460		0	1	1	5	Varies	1+	\$75
Massachusetts General Hospital *1	Boston	J B Ayer	457		14,293	9	1	1	0	2/1 & 8/1	1	\$75
University Hospital *1	Ann Arbor, Mich	C Camp	622		4,886	13	1	1	0	7/1	14	\$75
Henry Ford Hospital *1	Detroit	T J Heldt	780		6,883	10	1	0	0	7/1	24	\$100
Elmhurst Hospital and Infirmary *1	Florence, Mich	R Costello	495	495	1,473	21	1	1	0	7/1	12	\$75
Mayo Foundation	Rochester, Minn	(See page 788)										
Brooklyn Hospital *2	Brooklyn	L J Browder and H R Merwarth	280	135	1,850	17	1	0	0	7/1	1	\$50
Kings County Hospital *	Brooklyn	A Rabiner	3,546	3,546	3,479	107	2	2	0	7/1	1	\$13
Bellevue Hospital *1	New York City	F Kennedy	374	324	7,358	26	1	0	0	1/1 & 7/1	1	\$50
Lenox Hill Hospital *	New York City	T H Davis		193	1,529	7	1	0	0	1/1	1	\$50
Metropolitan Hospital *1	New York City	S P Jewett	168	168	1,529	4	1	0	0	7/1	1+	\$50
Montefiore Hospital for Chronic Diseases *1	New York City	S P Goodhart	243	150	894	24	1	4	1	1/1	1	\$50
Morrisania City Hospital *	New York City	N Savitsky	1,494		2,105	1	0	0	1	1/1	1	\$50
Mount Sinai Hospital *1	New York City			13,496		1	2	1	0	1/1 & 7/1	1	\$50
Neurological Institute of New York	New York City	T J Putnam	3,297	492	20,265	63	1	12	0	Quart	1+	\$10
New York City Hospital *	New York City	L V Lyons	492	492	1,625	49	1	0	0	7/1	1	\$10
Welfare Hospital for Chronic Diseases *1	New York City		759	759	24	24	4	0	0	7/1	1+	\$18
Duke Hospital *1	Durham, N C	R W Graves	185	159	823	4	0	1	0	7/1	1	\$50
Cincinnati General Hospital *1	Cincinnati	C D Aring	57	317	1,870	66	1	0	1	7/1	1	\$50
Jefferson Medical College Hospital *	Philadelphia	B J Alper	332		20,592	1	0	1	0	9/1	3	\$10
Temple University Hospital *1	Philadelphia	T S Fay	466	466	5,570	29	1	0	0			

12. NEUROSURGERY

			1,601	1,601	673	7	2	0	0	7/1	23	\$10
Los Angeles County Hospital *1	Los Angeles	C Rand	1,601	1,601	673	7	2	0	0	7/1	23	\$10
University of California Hospital *1	San Francisco	H C Kaffziger	108	108		5	1	0	0	7/1	1+	\$50
Presbyterian Hospital *	Chicago	A Verbrugghen	413	413		20	2	0	0	7/1	3	\$50
Research and Educational Hospital *	Chicago	E Oldberg	430	61		15	1	0	0	7/1	13	\$50
St Luke's Hospital *	Chicago	E Oldberg	430	61		15	1	0	0	7/1	13	\$50
Johns Hopkins Hospital *	Baltimore	W B Dandy	644	325		32	0	1	0	7/1	12	\$100
Boston City Hospital *1	Boston	D Munro	470	470		17	1	1	0	Varies	1+	\$50
Lahey Clinic	Boston	G Horrax	690			0	0	4	1	1/1, 7/1, 9/1	12	\$100
Massachusetts General Hospital *1	Boston	W J Mixer	79			19	1	0	0	1/1 & 7/1	1	\$12
Henry Ford Hospital *	Detroit	A S Crawford	250		974	8	1	1	0	9/1	23	\$120
Mayo Foundation	Rochester, Minn	(See page 788)										
Barnes Hospital *	St Louis	E Sachs	715			22	0	0	2	1/1 & 7/1	1+	\$50
Albany Hospital *	Albany, N Y	E H Campbell, Jr	302	120		18	1	1	0	7/1	1	\$50
Jewish Hospital *1	Brooklyn	J M Davidoff	317	161	565	14	1	1	1	1/1	2	\$50
Kings County Hospital *	Brooklyn	F J Browder	3,064	3,064	1,612	129	1	1	0	7/1	1	\$50
Edward J Meyer Memorial Hospital *	Buffalo	W B Hamby	42	42	60	4	1	0	0	7/1	1	\$50
Neurological Institute of New York	New York City	L P Stooler				1	1	3	0	Quart	1+	\$10
Strong Memorial and Rochester Municipal Hospital *	Rochester, N Y	W P Van Wageningen	767	272	475	22	1	0	0	7/1	12	\$50
Cleveland Clinic	Cleveland	W J Gardner	377			27	1	0	2	7/1	1	\$50
Hospital of the University of Pennsylvania	Philadelphia	F C Grant	424		161	27	1	0	2	7/1	3	\$50
Temple University Hospital *1	Philadelphia	(See Neurology)										
Medical College of Virginia, Hospital Div *	Richmond	C C Coleman	1,716		42	33	1	1	0	7/1	1	\$50

13. OBSTETRICS

The following services accredited by the Council are fully approved by the American Board of Obstetrics and Gynecology:

		Chief of Service	Inpatients Treated	Service or House Calls	Outpatient Visits	Autopsies	Residents	Assistant Residents	Fellowships	Service Begins	Length of Service (Years)	Resident Stipend
Hospital for Children * ²	San Francisco	H. Stephenson	1,200	190	2,526	6	0	1	0	7/1	1	\$25
Research and Educational Hospital *	Chicago	F. Falls	697	697	.....	12	3	0	0	7/1	1-3	\$25
Research Company of Mary Hospital * ¹	Evergreen Park, Ill.	P. E. Lawler	1,595	1,593	.....	1	1	0	0	10/1	1-2	\$50
Johns Hopkins Hospital *	Baltimore	N. J. Eastman	2,062	1,654	16,215	4	1	4	0	7/1&9/1	1-6	None
University Hospital * ¹	Baltimore	L. H. Douglass	1,542	.....	12,034	12	1	3	0	7/1	1-4	None
Union Lying-in Hospital	Boston	F. C. Irving	3,453	3,351	31,291	1	12	0	0	1/1&7/1	1-1/2	\$50
Providence Hospital *	Detroit	R. W. Alles	2,675	.....	.....	4	1	0	0	7/1	1	\$103
Margaret Hague Maternity Hospital ¹	Jersey City, N. J.	S. A. Cosgrove	6,285	3,556	35,402	51	7	0	0	Quart.	1-1/2	\$100
Methodist Hospital *	Brooklyn	O. P. Humpstone	2,548	1,002	14,263	2	1	1	0	7/1	1	\$19
Buffalo General Hospital *	Buffalo	F. C. Goldsborough	864	551	3,267	12	1	0	0	7/7	1-2	\$25
Millard Fillmore Hospital *	Buffalo	M. G. Potter	1,926	133	690	12	1	0	0	7/1	1	\$25
French Hospital *	New York City	F. C. Holden	1,638	564	6,548	1	1	0	0	7/1	1	\$83
New York Infirmary for Women and Children * ²	New York City	A. Hubert and W. Ragland	1,116	840	5,949	..	1	0	0	7/1	1	\$15
Syracuse Memorial Hospital *	Syracuse, N. Y.	H. W. Schoenck	1,444	572	1,909	2	1	0	0	7/1	1	None
Cincinnati General Hospital *	Cincinnati	H. L. Woodward	2,936	2,936	3,571	32	2	2	0	7/1	1-3	\$
Jefferson Medical College Hospital *	Philadelphia	N. W. Vaux	3,551	.....	14,457	0	0	0	0	7/1&10/1	1-3	\$50
Elizabeth Steel Magee Hospital	Pittsburgh	C. E. Ziegler	3,488	1,635	9,582	6	2	3	0	9/1	1	\$33
St. Joseph's Infirmary	Houston, Tex.	H. W. Johnson	3,906	105	674	2	1	1	0	7/1	1-2	\$25

The following services, approved by the Council, are now being reviewed in collaboration with the American Board of Obstetrics and Gynecology:

Garfield Memorial Hospital *	Washington, D. C.	A. Y. P. Garnett	2,028	420	2,305	0	1	1	0	7/1	1-2	\$50
Sibley Memorial Hospital *	Washington, D. C.	J. Kotz	2,174	42	.....	3	1	0	0	7/1	1-2	\$63
Chicago Maternity Center ¹	Chicago	B. E. Tucker	.....	.....	19,210	74	1	0	0	1/1	1	None
Cook County Hospital * ¹	Chicago	D. S. Hills	8,416	8,416	16,580	56	6	0	2	1/1&7/1	2	\$25
Grant Hospital *	Chicago	.....	1,749	335	3,881	2	1	0	0	7/1	1-3	\$50
Provident Hospital * ¹	Chicago	P. M. Santos	1,746	.....	3,810	1	1	0	0	7/7	1-3	\$50
St. Vincent's Infant and Maternity Hospital	Chicago	H. E. Schmitz	257	257	1,028	3	1	0	0	7/1	1	\$50
Indiana University Medical Center * ¹	Indianapolis	H. E. Beckman	1,263	.....	4,631	18	1	0	0	7/2	1-2	\$73
Touro Infirmary *	New Orleans	N. W. Levy	1,328	.....	11,922	3	2	0	0	7/1	1	\$25
Baltimore City Hospitals *	Baltimore	L. H. Douglass	2,636	2,636	.....	2	1	2	0	7/1	1	\$12
Franklin Square Hospital *	Baltimore	L. A. Siegel	672	325	1,251	0	0	1	0	7/1	1	\$10
Provident Hospital and Free Dispensary *	Baltimore	L. H. Douglass	277	266	726	..	1	0	0	10/15	1	\$25
Sinal Hospital *	Baltimore	M. W. Aaronson	1,007	449	3,780	1	1	1	0	7/1	1	\$50
Union Memorial Hospital *	Baltimore	J. McF. Bergland	608	.....	2,252	2	1	1	0	7/1	1-2	\$30
Massachusetts Memorial Hospital *	Boston	C. W. Sewall	926	.....	6,046	1	2	0	0	8/1	2	\$95
Cooper Hospital *	Camden, N. J.	A. B. Davis and G. B. German	1,672	.....	7,447	0	1	0	0	7/1	3	\$100
Anthony N. Brady Maternity Home	Albany, N. Y.	G. E. Lochner	1,444	448	2,402	0	1	0	0	7/1	1-2	\$100
Cumberland Hospital *	Brooklyn	S. Lubin	1,335	1,335	8,506	2	1	1	0	1/1&7/1	1	\$18
Norwegian Lutheran Deaconesses' Home and Hospital * ¹	Brooklyn	B. Harris and J. B. Dowd	954	.....	3,680	..	1	0	0	7/1	1	None
Fordham Hospital *	New York City	A. C. Butts	1,297	1,297	7,632	4	1	0	0	7/1	1	\$18
Harlem Hospital * ¹	New York City	F. A. Kassebohm	3,109	3,109	10,830	2	1	0	0	7/1	1	\$18
Lenox Hill Hospital *	New York City	R. C. Van Etten	.....	1,105	4,470	1	1	0	0	7/1	1	\$50
Morrisania City Hospital *	New York City	H. Aranow	1,215	1,215	4,528	..	1	1	0	7/1	1	\$15
New York Polytechnic Medical School and Hospital *	New York City	.....	972	.....	2,441	1	1	0	0	7/1	2	\$125
Watts Hospital *	Durham, N. C.	R. A. Ross	739	147	864	1	1	0	0	7/1	1	\$50
City Hospital *	Cleveland	A. H. Bill	1,649	1,649	3,323	6	1	2	0	7/1	1-3	\$10
Mount Sinal Hospital * ¹	Cleveland	M. Garber	1,039	06	746	2	1	0	0	7/1	1	\$63
St. Ann's Maternity Hospital	Cleveland	J. R. Thompson	2,015	.....	1,590	1	3	0	0	7/1	1	\$50
St. John's Hospital *	Cleveland	C. A. O'Connell	1,279	.....	.....	1	1	0	0	7/1	1-2	\$50
University Hospitals * ¹	Cleveland	A. H. Bill	2,751	1,048	22,316	1	4	1	0	7/1	2	\$25
Miami Valley Hospital *	Dayton, O.	G. Erbaugh	1,621	490	.....	3	1	0	0	7/1	1-4	\$75
St. Vincent's Hospital * ¹	Toledo, O.	R. O. King	993	124	706	1	1	0	0	7/1	1-3	\$100
George F. Giesinger Memorial Hospital *	Danville, Pa.	R. E. Neodemus	665	.....	2,992	0	1	0	0	9/1	1	\$50
Woman's Hospital * ²	Philadelphia	.....	996	.....	3,331	0	1	0	0	3/1	1	\$25
St. Francis Hospital *	Pittsburgh	J. H. Carroll	1,324	.....	1,515	0	1	0	0	9/1	1	\$63
Baroness Erlar	Chattanooga, Tenn.	H. P. Hewitt	2,120	1,306	5,091	5	1	0	0	7/1	1-2	\$10
John Gaston	Memphis, Tenn.	W. T. Pride	3,320	.....	12,563	7	1	1	0	7/1	1	\$33
Baylor University Hospital *	Dallas, Tex.	W. E. Massey	1,627	191	5,174	2	1	1	0	7/1	1-2	\$78
Parkland Hospital *	Dallas, Tex.	W. T. Robinson	2,003	.....	6,775	3	2	0	0	1/1&7/1	2	\$25
Medical College of Virginia, Hospital Div. *	Richmond	H. H. Ware	1,541	.....	5,827	9	1	1	0	7/1	1	\$25

14. OBSTETRICS-GYNECOLOGY

The following services accredited by the Council are fully approved by the American Board of Obstetrics and Gynecology:

Los Angeles County Hospital * ¹	Los Angeles	F. M. Lazard	7,977	7,977	10,850	18	7	0	0	4/1&10/1	3	\$10
Highland-Alameda County Hospital * ¹	Oakland, Calif.	C. W. Page and C. A. DePuy	2,233	2,233	.....	4	1	1	0	7/1	1-3	\$30
Stanford University Hospitals * ¹	San Francisco	L. A. Emge	1,903	1,496	13,985	5	1	2	0	7/1	1-2	\$25
University of California Hospital * ¹	San Francisco	F. W. Lynch	1,562	1,173	13,611	5	1	3	0	7/1	1-4	\$25
New Haven Hospital * ¹	New Haven, Conn.	A. H. Morse	1,720	.....	7,779	4	2	1	0	7/1	1-4	*
Columbia Hospital for Women and Lying-in Asylum ¹	Washington, D. C.	.....	3,846	1,449	11,497	5	2	2	0	1/1&7/1	1-1/2	None
Gallinger Municipal Hospital * ¹	Washington, D. C.	H. F. Kane	3,349	3,349	5,626	15	2	2	0	7/1	1	\$25
Grady Hospital *	Atlanta, Ga.	.....	5,803	5,803	55,615	23	2	4	0	7/1	1-4	\$50
University Hospital * ¹	Augusta, Ga.	R. Torpin	2,464	.....	3,906	11	1	2	0	7/1	1-2	\$25
Michael Reese Hospital * ¹	Chicago	J. L. Baer	3,442	1,072	518	5	2	0	0	1/1&7/1	1-2	\$20
Mount Sinal Hospital * ¹	Chicago	.....	1,435	323	3,072	7	1	0	0	7/1	1	\$20
Presbyterian Hospital *	Chicago	N. P. Heaney	1,977	601	.....	2	3	0	0	Varies	2-4	\$20
University Hospitals * ¹	Iowa City	E. D. Plasse	3,276	3,113	3,742	8	1	3	0	7/1	1-6	\$21
University of Kansas Hospitals *	Kansas City, Kan.	L. A. Calkins	1,252	.....	6,520	3	1	3	0	7/1	1-4	\$14
Louisville City Hospital *	Louisville, Ky.	C. W. Hibbitt	2,620	2,620	16,283	6	1	5	0	7/1	1-4	\$14
Maryland General Hospital *	Baltimore	E. B. Koman and K. B. Boyd	940	159	1,332	1	2	0	0	7/1	1-2	\$25
Mercy Hospital *	Baltimore	A. Samuels and E. P. Smith	1,403	.....	3,465	8	1	1	0	9/1	3	\$25
Boston City Hospital * ¹	Boston	R. M. Green	6,010	6,010	18,727	5	2	0	0	Varies	1-4	None
Carney Hospital *	Boston	L. E. Phaneuf	1,057	321	5,096	1	1	2	0	1/1,5/1,9/1	1-2	None
University Hospital * ¹	Ann Arbor, Mich.	N. F. Miller	2,279	.....	11,590	30	2	2	0	7/1	1-4	\$25
City of Detroit Receiving Hospital * ^{1,10,11}	Detroit	W. F. Seeley	1,040	1,040	5,191	15	2	2	0	7/1	4	\$25
Florence Crittenton Hospital	Detroit	E. E. Martner	2,754	613	3,785	1	1	2	0	7/1	3	\$20
Grace Hospital *	Detroit	M. A. Darling	3,594	1,163	3,715	..	1	2	0	7/1&9/1	3	\$20

14. OBSTETRICS-GYNECOLOGY—(Continued)

	Chief of Service	Inpatients Treated	Service or House Calls	Outpatient Visits	Antenatal	Residents	Assistant Residents	Fellow-ships	Service Begins	Length of Service (Years)	Beginning Stipend
Henry Ford Hospital *	Detroit..... J. P. Pratt.....	1,822	.....	19,825	14	1	2	0	9/1	4	\$130 ⁰⁰
Herman Klefer Hospital	Detroit..... W. F. Seeley.....	2,132	2,132	.....	51	1	0	0	7/1	1	\$150
Minneapolis General Hospital *	Minneapolis..... J. H. Simons.....	2,223	2,223	11,055	8	0	0	2	1/1&7/1	3	\$25
University Hospitals *	Minneapolis..... J. L. McKelvey.....	1,217	.....	7,051	9	1	0	4	7/1	3	\$50
Mayo Foundation	Rochester, Minn..... (See page 788)										
Ancker Hospital *	St. Paul..... L. W. Barry.....	1,579	1,579	10,515	11	1	0	0	7/1	3	\$50
St. Louis City Hospital *	St. Louis..... G. Jones and T. R. Ayars.....	3,429	3,429	9,068	63	1	4	0	7/1	1-3	\$50
St. Louis Maternity Hospital *	St. Louis.....	2,139	1,215	.....	0	1	1	0	7/1	1-3	None
St. Luke's Hospital *	St. Louis.....	1,145	.....	1,324	4	0	1	0	7/1	1	\$50
Creighton Memorial St. Joseph's Hospital *	Omaha.....	1,659	.....	.....	5	1	0	0	7/1	1	\$50
University of Nebraska Hospital *	Omaha..... E. C. Sage.....	919	919	3,801	3	12	0	0	7/1	1-3	\$50
Greenpoint Hospital *	Brooklyn..... T. S. Welton.....	1,633	1,633	12,821	0	12	0	0	9/1	1	None
Jewish Hospital *	Brooklyn.....	4,465	1,233	8,328	1	12	4	0	1/1&7/1	2	\$25
Kings County Hospital *	Brooklyn..... R. Garlick and C. Gordon.....	7,519	7,519	26,372	25	4	0	0	7/1	1	\$18
Long Island College Hospital *	Brooklyn..... A. C. Beck.....	2,462	1,124	14,386	3	1	2	0	7/1	3	\$23
Bellevue Hospital *	New York City..... W. E. Studdiford.....	4,303	4,303	26,463	13	2	1	0	1/1&7/1	3	\$75
Flower and Fifth Avenue Hospitals *	New York City..... L. S. Loizeaux.....	2,672	891	4,570	5	1	0	0	7/1	1	\$25
Lincoln Hospital *	New York City..... E. J. Davin.....	2,690	2,690	18,708	5	2	2	0	1/1&7/1	1-4	\$18
Sloane Hospital for Women *	New York City..... B. P. Watson.....	4,735	3,106	34,905	..	11	0	0	1/1&7/1	1-3	None
Woman's Hospital *	New York City..... A. H. Aldridge.....	4,008	2,044	40,071	5	11	0	0	Quart.	1-3	\$10
Strong Memorial and Rochester Municipal Hospitals *	Rochester, N. Y..... K. M. Wilson.....	2,834	1,791	12,557	7	1	2	2	7/1	1-4	\$12
Duke Hospital *	Durham, N. C..... B. Carter.....	1,907	1,604	13,545	43	1	3	4	7/1	1-7	None
Hahnemann Hospital *	Philadelphia..... E. B. Craig and W. C. Mercer.....	1,646	.....	8,067	2	0	1	0	9/1	2	\$50
Hospital of the University of Pennsylvania *	Philadelphia..... C. C. Norris.....	2,538	.....	14,625	7	3	0	0	9/1	3	None
Kensington Hospital for Women	Philadelphia..... E. A. Schumann.....	1,541	1,541	7,060	5	2	1	0	7/1	1-3	\$25
Pennsylvania Hospital *	Philadelphia.....	3,214	1,736	17,017	7	3	0	0	1/1,5/1,9/1	1-2	\$20
Philadelphia General Hospital *	Philadelphia.....	5,067	5,067	11,894	..	1	0	0	7/1 or 8/1	1-2	\$100
Roper Hospital *	Charleston, S. C..... L. A. Wilson.....	1,462	1,040	16,000	8	1	1	1	7/1	1-3	\$10
John Sealy Hospital *	Galveston, Tex..... W. R. Cooke.....	1,376	.....	8,776	..	2	1	0	7/1	1-3	\$25

The following services, approved by the Council, are now being reviewed in collaboration with the American Board of Obstetrics and Gynecology:

Hillman Hospital *	Birmingham, Ala.....	3,430	3,430	20,210	15	2	0	0	7/1	1	\$50
White Memorial Hospital *	Los Angeles..... R. J. Thompson.....	1,810	.....	13,620	1	2	0	0	7/1	3	\$50
San Francisco Hospital *	San Francisco..... W. G. Moore and A. V. Pettit.....	2,067	2,067	.....	..	4	0	0	7/1	1	\$50
Santa Clara County Hospital *	San Jose, Calif..... A. Shufelt.....	1,434	1,434	12,430	..	1	0	0	7/1	1	\$75
Grace Hospital *	New Haven, Conn..... H. B. Perrins.....	1,639	362	1,217	2	1	0	0	7/1	3	\$50
Freedmen's Hospital *	Washington, D. C..... J. W. Ross.....	2,741	2,741	8,643	22	1	2	0	7/1&10/1	1-2	\$10
Chicago Lying-in Hospital and Dispensary	Chicago..... (See University of Chicago Clinics)	1,282	263	6,644	11	2	0	0	7/1	1-3	\$50
Mercy Hospital-Loyola University Clinics *	Chicago..... H. E. Schmitz.....	1,901	985	8,788	5	2	1	0	7/1	1-3	\$25
St. Luke's Hospital *	Chicago..... H. O. Jones.....	3,978	3,978	34,651	9	3	4	0	1/1&7/1	3	None
University of Chicago Clinics *	Chicago..... F. L. Adair.....	2,077	.....	16,824	18	2	0	1	7/1	1-2	\$12
Indianapolis City Hospital *	Indianapolis..... J. W. Hoffmann and H. F. Beckman.....	13,378	13,378	47,453	61	0	5	0	7/1	1-3	\$25
Charity Hospital *	New Orleans.....	1,350	.....	3,436	2	1	1	0	7/1	2-3	\$10
St. Joseph's Hospital *	Baltimore..... W. L. Galvin.....	2,490	262	.....	..	1	2	0	7/1	1-3	\$25
Harper Hospital *	Detroit..... G. Kamperman.....	3,978	.....	2,636	7	2	7	1	7/1	1-3	\$75
Woman's Hospital *	Detroit..... H. M. Nelson and L. E. Daniels.....	1,964	1,964	9,305	10	3	0	1	7/1	3	\$50
Kansas City General Hospital *	Kansas City, Mo..... R. R. Wilson.....	3,610	3,610	25,532	17	2	2	0	7/1	1-3	\$75
Hoover G. Phillips Hospital *	St. Louis..... T. K. Brown.....	1,405	169	1,882	2	1	0	0	7/1	1-4	\$70
Jewish Hospital *	St. Louis..... S. Weintraub.....	2,789	1,478	14,520	13	0	0	6	7/1	3	\$25
St. Mary's Group of Hospitals *	St. Louis..... W. H. Vogt.....	1,666	981	6,036	2	1	1	0	7/1	1-2	\$10
St. Mary's Hospital *	Brooklyn..... E. A. Keyes.....	1,453	1,453	8,203	9	1	2	1	7/1	3-4	\$18
Edward J. Meyer Memorial Hospital *	Buffalo..... F. C. Goldsborough.....	2,971	2,971	5,565	13	1	1	0	7/1	1	\$18
Queens General Hospital *	Jamaica, N. Y..... E. A. Flemming.....	5,021	3,906	40,987	13	2	5	0	7/1	2-6	\$13
Lying-in Hospital	New York City..... H. B. Safford.....	2,005	2,005	13,310	3	2	0	0	7/1	1+	\$18
Metropolitan Hospital *	New York City.....	1,826	1,826	4,312	6	1	0	0	7/1	1	None
New York City Hospital *	New York City..... J. V. Ricci and K. Johnson.....	1,874	161	.....	2	1	0	0	7/1	1	\$5
Mercy Hospital *	Canton, O..... L. E. Leavenworth.....	2,167	395	3,543	2	2	1	0	6/25	3	\$50
St. Luke's Hospital *	Cleveland..... G. B. Hurd and C. T. Hemmings.....	2,344	91	927	2	1	1	0	7/1	1-3	\$50
Huron Road Hospital *	East Cleveland, O..... G. J. Salisbury and S. C. Rannels.....	1,095	1,095	2,306	9	1	0	0	7/1	1	\$50
Lucas County General Hospital *	Toledo, O..... E. C. Mohr.....	1,064	995	8,888	11	1	1	0	7/1	2	\$50
University Hospitals *	Oklahoma City..... G. Peniek and W. W. Wells.....	2,221	2,221	12,348	12	1	3	0	7/1	4	\$10
University of Oregon Medical School Hospitals and Clinics *	Portland..... R. E. Watkins.....	632	.....	2,703	6	1	0	0	7/1	1-2	\$75
George W. Hubbard Hospital of Meharry Medical College *	Nashville, Tenn..... C. S. McMurray and R. S. Duke.....	1,835	1,797	17,337	9	1	2	0	7/1	1-2	\$25
Nashville General Hospital *	Nashville, Tenn..... D. C. Seward and M. S. Lewis.....	1,373	84	12,393	3	1	3	0	7/1	1+	\$25
Vanderbilt University Hospital *	Nashville, Tenn..... L. E. Burch.....	1,264	1,264	5,235	2	1	2	0	7/1	1	\$50
University of Virginia Hospital *	Charlottesville..... T. J. Williams.....	1,003	.....	5,407	4	1	1	1	7/1	3	\$25
State of Wisconsin General Hospital *	Madison..... J. W. Harris.....	2,610	2,610	16,325	5	2	1	0	7/1&7/15	1	\$50
Milwaukee County Hospital *	Wauwatosa, Wis..... A. H. Lahnmann.....										

15. OPHTHALMOLOGY

Los Angeles County Hospital *	Los Angeles..... A. Irvine and W. Boyce	701	.....	15,102	1	2	0	0	1/1	2	\$10
White Memorial Hospital *	Los Angeles..... W. A. Boyce.....	133	.....	13,015	0	1	0	0	7/1	1-3	\$50
Green's Eye Hospital.....	San Francisco..... A. S. Green.....	711	.....	46,063	..	1	0	0	7/1	2	\$50
San Francisco Hospital *	San Francisco.....	6121	6121	.....	..	1	0	0	7/1	1	\$50
Stanford University Hospitals *	San Francisco..... H. Barkan.....	393	221	10,955	..	1	2	0	7/1	1-2	\$25
University of California Hospital *	San Francisco..... H. C. Naffziger.....	261	221	15,591	..	0	2	0	7/1	2	\$10
Colorado General Hospital *	Denver..... W. M. Banc.....	121	121	11,630	..	1	1	0	8/1	2	None
Episcopal Eye, Ear and Throat Hospital..	Washington, D. C.....	6,294	7,637	59,471	..	4	0	0	3/1, 7/1, 11/1	1-15	\$25
Cook County Hospital *	Chicago..... W. F. Moncreiff.....	743	743	26,291	0	5	0	0	1/1&5/1	2	\$25
Illinois Eye and Ear Infirmary *	Chicago..... H. S. Gradle.....	2,629	2,629	26,910	0	7	7	0	1/1&7/1	1	None
Michael Reese Hospital *	Chicago..... S. J. Meyer.....	556	95	653	..	1	0	0	7/1	1	\$50

15. OPHTHALMOLOGY—(Continued)

		Chief of Service	Inpatients Treated	Service or House Cases	Outpatient Visits	Autopsies	Residents	Assistant Residents	Fellow- ships	Service Beginns	Length of Service (Years)	Beginning Stipend
Passavant Memorial Hospital * ¹	Chicago.....	S. R. Gifford.....	383	87	8,831	1	1	0	0	7/1	1	None
Presbyterian	Chicago.....	W. F. Moncreiff.....	139	6	.....	0	12	0	0	7/1&7/1	1	\$25
Research and University of	Chicago.....	H. Beard.....	234	234	.....	0	1	0	0	7/1	1	\$50
Indianapolis	Chicago.....	E. V. L. Brown.....	184	.....	9,803	0	1	3	3	7/1	1-3	\$25
Indiana University Medical Center * ¹	Indianapolis.....	B. J. Larkin.....	182	182	6,318	1	1	1	0	7/1	2	\$42
University Hospitals * ¹	Indianapolis.....	W. F. Hughes.....	375	375	3,019	1	1	0	0	7/1	1-3	\$25
Eye, Ear, Nose and Throat Hospital.....	Iowa City.....	C. S. O'Brien.....	1,043	991	7,037	1	1	2	1	1/1&7/1	1-6	\$21
Johns Hopkins Hospital *	Baltimore.....	W. R. Buffington mnd W. B. Clark.....	752	.....	17,881	..	3	3	0	7/1	2	None
Massachusetts Eye and Ear Infirmary.....	Baltimore.....	A. C. Woods.....	1,243	701	21,006	1	1	4	0	7/1&9/1	1-4	None
University Hospital * ¹	Boston.....	E. B. Dunphy.....	2,982	2,203	53,302	0	8	0	0	Quart.	2	None
Henry Ford Hospital *	Ann Arbor, Mich.....	F. B. Fraleigh.....	624	.....	11,344	0	12	1	0	7/1	1-3	\$25
University Hospitals * ¹	Detroit.....	E. L. Whitney.....	253	.....	17,992	0	1	2	0	7/1	3	\$130 ^a
Barnes Hospital *	Minneapolis.....	F. E. Burch.....	281	.....	6,346	..	0	0	2	7/1	3	\$50
St. Mary's Group of Hospitals *	St. Louis.....	L. T. Post.....	464	.....	19,970	1	1	1	0	7/1	1-3	\$25
St. Louis City Hospital *	St. Louis.....	L. T. Post.....	149	149	8,497	0	1	1	0	7/1	1-2	\$50
Brooklyn Eye and Ear Hospital.....	St. Louis.....	W. H. Lucde.....	138	90	9,530	0	0	0	2	7/1	3	\$25
Kings County Hospital *	Brooklyn.....	W. Moehle.....	1,915	1,915	63,109	0	6	0	0	3/1,7/1,11/1	2	None
Long Island College Hospital * ¹	Brooklyn.....	J. N. Evans.....	513	513	12,250	2	1	1	0	7/1	1	\$18
Edward J. Meyer Memorial Hospital *	Buffalo.....	I. J. Koenig.....	219	201	6,992	..	1	1	2	7/1	4	\$23
Queens General Hospital * ¹	Buffalo.....	J. G. Frey.....	147	147	6,159	..	1	2	0	7/1	3-4	\$50 ^a
Bellevue Hospital * ¹	Jamaica, N. Y.....	W. G. Frey.....	285	285	10,136	..	1	0	0	7/1	1	\$18
Manhattan Eye, Ear and Throat Hospital.	New York City.....	D. B. Kirby.....	730	730	22,517	0	6	0	0	1/1&7/1	1	Varies
Metropolitan Hospital * ¹	New York City.....	.....	1,933	1,507	81,402	1	7	0	0	1/1,5/1,9/1	2 1/2	None
Mount Sinai Hospital * ^{1,10}	New York City.....	.....	175	175	5,250	1	1	0	0	7/1	1+	\$18
New York Eye and Ear Infirmary.....	New York City.....	.....	2,930	.....	16,916	..	1	1	0	Quart.	2	\$50
Presbyterian Hospital * ¹	New York City.....	P. Thygeson and J. M. Dunnington.....	2,334	1,323	35,123	..	1	5	0	1/1&7/1	3	None
St. Luke's Hospital *	New York City.....	W. G. Frey.....	211	174	9,074	0	1	1	0	12/1	1 1/2	\$25
Welfare Hospital for Chronic Diseases * ^{1,31}	New York City.....	.....	250	250	3,800	..	1	1	0	7/1	1+	\$18
Strong Memorial and Rochester Municipal Hospitals *	Rochester, N. Y.....	J. F. Gipner.....	266	199	7,613	..	1	1	0	7/1	2	\$12
Grasslands Hospitals * ¹	Valhalla, N. Y.....	E. C. Wood.....	106	106	5,630	0	1	0	0	7/1	1-2	\$75
Cincinnati General Hospital *	Cincinnati.....	D. T. Vail.....	443	443	10,467	..	1	1	0	7/1	1-2	\$4
City Hospital * ¹	Cleveland.....	P. W. Moore.....	209	209	6,665	1	1	0	0	7/1	1-3	\$40
University Hospitals * ¹	Cleveland.....	A. B. Bruner.....	631	204	9,987	2	1	1	0	7/1	2	\$25
University of Oregon Medical School Hos- pitals and Clinics *	Portland.....	F. A. Kiehle.....	193	193	15,953	1	1	0	0	7/1	1	\$40
Graduate Hospital of the University of Pennsylvania *	Philadelphia.....	W. Shoemaker and L. C. Peter.....	356	356	5,638	2	1	0	0	7/1	1	None
Hospital of the University of Pennsylvania *	Philadelphia.....	F. H. Adler.....	407	.....	6,356	0	0	0	4	7/1	3	None
Temple University Hospital * ¹	Philadelphia.....	W. I. Lillie.....	293	293	8,856	0	1	0	0	0/1	3	\$10
Wills Hospital	Philadelphia.....	.....	3,725	2,732	132,996	0	9	0	0	Quart.	2 1/2	None
Jefferson Davis Hospital * ¹	Houston, Tex.....	F. J. Stataper.....	358	358	4,758	0	1	0	0	7/1	1	\$30

16. OPHTHALMOLOGY-OTOLARYNGOLOGY

San Diego County General Hospital *.....	San Diego, Calif.....	C. W. Brown and F. M. Bond.....	1,021	1,021	7,060	..	1	0	0	7/1	1	\$115
Hospital for Children * ²	San Francisco.....	G. Hosford and R. C. Martin.....	830	122	4,425	0	1	0	0	7/1	1	\$25
Gallinger Municipal Hospital *	Washington, D. C.....	D. Davis.....	1,222	1,222	2,620	1	1	1	0	7/1	1	\$25
Grady Hospital *	Atlanta, Ga.....	.....	1,845	1,845	21,177	3	2	2	0	7/1	1-3	\$20
Provident Hospital *	Chicago.....	C. L. Forney.....	439	.....	11,232	..	0	0	1	7/1	1-3	\$30
Louisville City Hospital *	Louisville, Ky.....	C. Wolfe and W. Dean	1,250	1,250	12,171	1	1	0	0	7/1	1	\$50
Charity Hospital * ¹	New Orleans.....	.....	6,575	.....	53,374	14	7	6	0	7/1	1-3	\$25
Touro Infirmary *	New Orleans.....	A. R. Crebbin and H. L. Kearney.....	1,535	.....	17,337	..	2	0	0	7/1	1	\$25
Baltimore Eye, Ear and Throat Charity Hospital * ¹	Baltimore.....	.....	2,823	1,270	20,345	..	4	0	0	7/1	1-2	None
University Hospital *	Baltimore.....	E. A. Loooper and C. A. Clapp.....	991	.....	8,678	2	0	2	0	7/1	1-4	None
Boston City Hospital * ¹	Boston.....	J. J. Regan and L. M. Freedman.....	4,995	4,995	53,729	8	2	0	0	Varies	1+	None
City of Detroit Receiving Hospital * ^{1,10}	Detroit.....	P. Heath mnd J. M. Robb.....	1,033	1,033	7,879	6	2	0	0	7/1	2	\$75 ^a
Grace Hospital *	Detroit.....	N. Bentley.....	1,637	512	5,456	..	1	0	0	7/1&9/1	1-2	\$50
Harper Hospital *	Detroit.....	P. Heath and J. M. Robb.....	3,232	373	.....	..	1	3	0	7/1	1-3	\$25
Shurly Hospital	Detroit.....	B. R. Shurly and M. Wainger.....	536	.....	12,825	0	2	0	0	7/1	1-3	\$25
Eloise Hospital and Infirmary * ¹	Eloise, Mich.....	R. Beattie.....	338	338	1,524	3	1	1	0	7/1	1-2	\$50
Minneapolis General Hospital * ¹	Minneapolis.....	M. C. Pfunder.....	1,310	.....	11,242	1	0	0	2	7/1	3	\$25
Mayo Foundation	Rochester, Minn.....	(See page 785)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ancker Hospital *	St. Paul.....	R. O. Leavenworth.....	1,276	.....	12,646	2	2	0	0	7/1	2	\$30
Children's Mercy Hospital	Kansas City, Mo.....	A. J. Bacr and H. Beal	1,145	1,148	6,593	5	1	0	0	7/1	1-2	\$25
Kansas City General Hospital *	Kansas City, Mo.....	A. W. McAlester and P. Lux.....	541	541	8,384	1	2	0	0	7/1	1	\$30
Homer G. Phillips Hospital * ¹	St. Louis.....	T. F. Sanders and L. J. Birnser.....	710	710	7,236	6	2	2	0	7/1	1-3	\$75
Jersey City Hospital *	Jersey City, N. J.....	.....	2,192	1,930	13,235	..	2	2	0	7/1	1-2	\$75
Newark Eye and Ear Infirmary.....	Newark, N. J.....	W. P. Earleton.....	2,141	.....	29,843	8	3	0	0	2/1, 6/1, 10/1	1	None
Harlem Eye and Ear Hospital * ¹	New York City.....	C. B. Meding.....	1,648	.....	32,509	0	3	0	0	Varies	3	None
New York Polytechnic Medical School and Hospital *	New York City.....	.....	1,788	.....	15,898	4	4	0	0	1/1&7/1	2	None
New York Post-Graduate Medical School and Hospital *	New York City.....	J. W. White and A. Nilsen.....	1,789	1,776	31,493	1	1	5	0	5/1&11/1	3	None
Rochester General Hospital *	Rochester, N. Y.....	E. W. Kennedy and C. S. Nash.....	.....	.....	8,534	..	2	0	0	7/1	2	\$50
Duke Hospital * ¹	Durham, N. C.....	W. B. Anderson und W. W. Eagle.....	1,122	926	9,048	1	1	3	2	7/1	1-3	None
Starling-Loving University Hospital * ¹	Columbus, O.....	A. D. Frost and H. G. Beatty.....	520	.....	6,789	0	1	0	0	7/1	1	\$25
University Hospitals *	Oklahoma City.....	W. W. Westfall and T. C. Walls.....	697	596	5,251	5	1	1	0	7/1	1-2	\$70
Eye, Ear, Nose and Throat Hospital.....	Pittsburgh.....	W. E. Carson and J. H. McCready.....	4,162	2,383	18,254	6	4	0	0	7/1	1 1/2	None
Knoxville General Hospital *	Knoxville, Tenn.....	J. L. Montgomery.....	651	.....	4,715	4	1	0	0	7/1	1	\$19
Memphis Eye, Ear, Nose and Throat Hosp.	Memphis, Tenn.....	E. C. Ellett and L. Levy.....	1,530	583	16,699	0	4	0	0	1/1&7/1	2	None

16. OPHTHALMOLOGY-OTOLARYNGOLOGY—(Continued)

		Chief of Service	Inpatients Treated	Service or House Calls	Outpatient Visits	Autopsies	Residents	Assistant Residents	Fellowships	Service Begins	Length of Service (Years)	Beginning Stipend
Nashville General Hospital *	Nashville, Tenn.	E. L. Roberts	793	791	8,544	1	1	1	0	7/1	1-2	\$35
Parkland Hospital *	Dallas, Tex.	J. G. Jones and J. D. Singleton	636	.....	5,678	2	1	0	0	7/1	1	\$25
University of Virginia Hospital *	Charlottesville	E. Burton and F. D. Woodward	1,197	1,197	7,555	2	1	2	0	7/1	1	\$25
Medical College of Virginia, Hospital Div.	Richmond	R. H. Courtney	1,331	.....	11,214	3	2	1	0	7/1	1	\$25
Gill Memorial Eye, Ear and Throat Hosp.	Roanoke, Va.	E. G. Gill	722	.....	11,471	0	1	1	0	1/1&7/1	1-2	\$50
King County Hospital *	Seattle	A. T. Wanamaker	506	506	9,807	0	1	0	0	7/1	1	\$75
State of Wisconsin General Hospital *	Madison	F. A. Davis and W. M. Nesbit	1,016	.....	3,977	11	1	2	0	7/1	3	\$25
Milwaukee County Hospital *	Wauwatosa, Wis.	E. R. Ryan and E. A. Waldeck	1,965	1,965	24,577	5	2	4	0	7/1&7/15	1-2	\$50

17. ORTHOPEDIC SURGERY

Revision of list is now taking place in collaboration with the American Board of Orthopaedic Surgery

Hillman Hospital *	Birmingham, Ala.	J. D. Sherrill	631	631	4,844	5	1	0	0	7/1	1	\$50
Children's Hospital *	Los Angeles	J. C. Wilson	433	328	5,287	1	1	0	0	7/1	1-3	\$90
Los Angeles County Hospital *	Los Angeles	J. C. Wilson	4,182	.....	32,839	10	4	0	0	4/1&10/1	2-3	\$10
Orthopaedic Hospital	Los Angeles	C. L. Lowman	2,042	.....	40,619	0	2	0	0	7/1	2-3	\$50
White Memorial Hospital *	Los Angeles	G. M. Taylor	251	.....	5,750	0	0	0	0	7/1	1	\$25
Hospital for Children *	San Francisco	L. Abbott	329	130	1,801	0	1	1	0	7/1	1	\$25
San Francisco Hospital *	San Francisco	F. C. Host	.....	.....	.....	0	0	1	0	7/1	1	\$30
Shriners Hospital for Crippled Children	San Francisco	S. L. Haas	379	321	3,448	0	1	0	0	7/1	1	\$25
University of California Hospital *	San Francisco	H. C. Naffziger	203	196	7,789	0	0	2	0	7/1	1-4	\$25
Children's Hospital	Denver	.....	661	661	.....	1	2	0	0	7/1	1-2	\$30
New Haven Hospital *	New Haven, Conn.	A. Bassin	.....	.....	10,463	2	1	0	0	7/1	1	\$25
Central Dispensary and Emergency Hosp. *	Washington, D. C.	G. W. Leadbetter	1,461	.....	2,408	18	1	0	0	6/15	1	\$75
Children's Memorial Hospital *	Chicago	F. A. Chandler	.....	.....	3,390	.....	1	0	0	7/1	1	\$30
Cook County Hospital *	Chicago	D. H. Levinthal	942	942	19,351	0	2	0	0	1/1&7/1	2	\$25
Michael Reese Hospital *	Chicago	D. H. Levinthal	760	170	409	.....	1	0	0	7/1	1-2	\$50
Research and Educational Hospital *	Chicago	H. B. Thomas	425	425	.....	0	3	0	0	7/1	1-3	\$50
Shriners Hospital for Crippled Children	Chicago	B. H. Moore	289	289	2,269	0	1	1	0	7/1	1	\$65
University of Chicago Clinics *	Chicago	H. C. Hatcher	596	596	6,200	1	1	3	1	7/7	1-3	None
Indiana University Medical Center *	Indianapolis	L. A. Ensminger	1,322	1,322	12,363	2	2	1	0	7/1	1-3	\$65
University Hospitals *	Iowa City	A. Steindler	3,095	3,795	7,081	0	1	7	0	7/1	1-6	\$21
Kosar Crippled Children's Hospital	Louisville, Ky.	W. B. Owen	919	919	784	0	1	1	0	7/1	1	\$25
Louisville City Hospital *	Louisville, Ky.	W. B. Owen	1,095	1,095	7,148	18	1	0	0	7/1	1	\$50
Charity Hospital *	New Orleans	H. T. Simon and G. Caldwell	3,546	3,546	25,642	7	7	3	0	7/1	1-3	\$25
Shriners Hospital for Crippled Children	Shreveport, La.	H. A. Durham	200	200	1,165	0	1	0	0	Varies	1	\$25
James Lawrence Kernan Hospital for Crip- pled Children	Baltimore	A. F. Yoshell	267	255	6,004	0	1	0	0	7/1	1	\$92
Johns Hopkins Hospital *	Baltimore	G. E. Bennett	662	413	17,639	3	1	1	0	7/1&9/1	1-4	None
Boston City Hospital *	Boston	O. J. Hermann	1,516	1,516	8,655	7	1	1	0	Varies	1-4	None
Children's Hospital	Boston	F. R. Ober	477	380	11,170	.....	1	0	0	9/1	1	\$65
Laher Clinic	Boston	G. E. Hagart	500	.....	5,000	.....	0	0	1	7/1	1-3	\$100
Massachusetts General Hospital *	Boston	S. M. Smith-Petersen	763	.....	15,063	1	1	0	0	7/1	1	\$12
Shriners Hospital for Crippled Children	Springfield, Mass.	R. N. Hatt	402	342	2,973	0	1	0	0	7/1	1	\$25
University Hospital *	Ann Arbor, Mich.	C. E. Badgley	1,900	.....	9,720	5	2	5	0	7/1	1-5	\$25
Henry Ford Hospital *	Detroit	C. L. Mitchell	888	.....	12,565	1	1	1	0	0/1	2-3	\$130
Mayo Foundation	Rochester, Minn.	(See page 788)	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gillette State Hospital for Crippled Chil- dren	St. Paul	C. C. Chatterton	815	.....	8,348	6	0	0	3	1/1&7/1	1	\$50
State Hospital for Crippled Children	Columbia, Mo.	W. J. Stewart	607	677	1,295	2	1	0	0	7/1	1	\$50
Kansas City General Hospital *	Kansas City, Mo.	F. D. Dickson	653	653	4,700	33	1	0	0	7/1	1	\$50
St. Luke's Hospital *	Kansas City, Mo.	F. D. Dickson	790	790	4,950	5	1	0	0	7/1	1-9	\$50
St. Mary's Group of Hospitals *	St. Louis	A. O'Reilly	268	266	4,831	1	0	0	3	7/1	3	Varies
Shriners Hospital for Crippled Children	St. Louis	H. H. Beckering	435	435	1,944	0	1	0	0	7/1	1-2	Varies
Nebraska Orthopaedic Hospital *	Lincoln	H. W. Orr	934	871	1,960	8	1	0	0	1/1	1-2	\$50
Jersey City Hospital *	Jersey City, N. J.	J. E. Toye	1,048	944	14,898	8	1	2	0	1/1&7/1	1-4	\$75
Hospital and Home for Crippled Children	Jersey City, N. J.	J. E. Toye	474	299	7,660	6	1	0	0	7/1	1	\$100
New Jersey Orthopaedic Hospital and Dis- pensary	Orange	H. W. Smith	466	295	24,647	1	1	2	0	1/1&7/1	1 1/2	\$70
Kings County Hospital *	Brooklyn	J. B. L'Episcopo	645	645	13,926	3	1	1	0	7/1	2	\$18
Long Island College Hospital *	Brooklyn	J. B. L'Episcopo	406	293	12,766	1	1	1	0	7/1	2-3	\$23
Buffalo General Hospital *	Buffalo	W. V. Plummer	671	322	1,735	1	1	0	0	7/1	1-2	\$25
Bellvue Hospital *	New York City	A. Krida	278	278	9,121	0	4	0	0	1/1&7/1	2	\$15
Hospital for Joint Diseases *	New York City	P. D. Wilson	2,918	1,637	40,516	11	13	0	2	7/1	1-3	\$25
Hospital for Special Surgery	New York City	P. D. Wilson	1,533	772	56,883	5	2	6	6	1/1&7/1	1-2	\$20
Metropolitan Hospital *	New York City	M. J. Wilson	697	697	2,912	2	1	0	0	7/1	1-4	\$75
Mount Sinai Hospital *	New York City	.....	.....	.....	14,140	.....	1	0	0	7/1	1	\$50
New York Orthopaedic Dispensary and Hospital	New York City	A. De F. Smith	1,758	1,758	91,319	2	8	0	3	Quart.	2-3	\$33
St. Luke's Hospital *	New York City	M. Cleveland	354	244	5,247	2	1	0	0	7/1	3	\$25
Strong Memorial and Rochester Municipal Hospitals *	Rochester, N. Y.	R. P. Schwartz	635	476	7,383	.....	1	0	0	7/1	1-2	\$67
Sea View Hospital *	Staten Island, N. Y.	D. Bosworth	268	268	.....	14	2	1	0	1/1&7/1	1	\$100
New York State Reconstruction Home	W. Haverstraw, N. Y.	A. De F. Smith	175	175	164	0	1	1	0	3/1&9/1	2	\$100
Duke Hospital *	Durham, N. C.	L. D. Baker	595	498	5,643	4	1	1	2	7/1	1-3	None
Cincinnati General Hospital *	Cincinnati	J. Freiberg	334	334	7,185	2	1	1	0	7/1	1-2	.....
Cleveland Clinic Foundation Hospital	Cleveland	J. A. Dickson	428	.....	.....	2	0	0	3	7/1	1-3	\$55
Mount Sinai Hospital *	Cleveland	R. Reich	618	316	7,214	.....	1	0	0	7/1	1	\$20
University Hospitals *	Cleveland	M. Harbin	562	422	7,309	1	1	0	0	7/1	2	\$25
Ione and Joint Hospital and McBride Clinic	Oklahoma City	E. D. McBride	698	698	21,895	0	1	0	0	1/1	2	\$20
St. Anthony Hospital *	Oklahoma City	W. K. West	752	92	.....	1	1	0	0	7/1	1	\$20
University Hospitals *	Oklahoma City	P. Colonna	1,330	1,232	9,137	9	3	0	2	7/1	1-3	\$20
Mersey Hospital for Crippled Children	Tulsa, Okla.	W. Siser	1,055	.....	5,465	0	1	0	0	7/1	1	\$20
Emanuel Hospital *	Portland, Ore.	R. B. Dillehunt	990	.....	2	8	1	0	0	7/1	1	\$19
Shriners Hospital for Crippled Children	Portland, Ore.	R. B. Dillehunt	222	322	2,224	1	1	0	0	7/1	1	\$20
State Hospital for Crippled Children	Elizabethtown, Pa.	T. Outland	289	289	723	2	3	0	0	9/1	2	\$100
Temple University Hospital *	Philadelphia	J. R. Moore	620	620	5,002	1	2	0	0	9/1	3	\$20
Robert Packer Hospital *	Sayre, Pa.	P. Harmon	161	746	4,868	16	0	0	2	9/1	2-3	\$20
Willis C. Campbell Clinic	Memphis, Tenn.	W. C. Campbell	1,093	.....	9,260	6	7	0	7	1/1&7/1	3	\$20
Parkland Hospital *	Dallas, Tex.	P. M. Girard	524	.....	3,904	3	1	0	0	7/1	1	\$25
Texas Scottish Rite Hospital for Crippled Children *	Dallas, Tex.	W. B. Carrell	700	700	2,782	0	1	0	0	7/1	1	\$100
University of Virginia Hospital *	Charlottesville	R. V. Funsten	625	625	4,154	4	1	1	0	7/1	1	\$25
Children's Orthopaedic Hospital *	Seattle	H. J. Wyckoff	455	.....	4,554	2	1	0	0	7/1	1	\$100
Children's Orthopaedic Hospital *	Madison	R. E. Burns	1,958	.....	6	2	4	0	0	7/1	3	\$25
State of Wisconsin General Hospital *	Madison	C. C. Schneider	1,259	1,259	11,231	5	1	1	0	7/1&7/15	1	\$20
Milwaukee County Hospital *	Wauwatosa, Wis.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

18. OTOLARYNGOLOGY

		Chief of Service	Inpatient's Treated	Service or House Cases	Outpatient Visits	Autopsies	Residents	Assistant Residents	Fellow- ships	Service Begins	Length of Service (Years)	Beginning Stipend
Children's Hospital ¹	Los Angeles	J M Brown	1,353	1,163	4,422	1	1	0	0	7/1	13	\$80
Los Angeles County Hospital ¹	Los Angeles	J M Brown	2,345	2,345	14,957	20	3	0	0	7/1	12	\$10
White Memorial Hospital ¹	Los Angeles	B N Colver	1,137		11,322	1	2	0	0	7/1	13	\$80
San Francisco Hospital ¹	San Francisco		642	642			2	0	0	7/1	1	\$80
Stanford University Hospitals ¹	San Francisco	J Bacher	1,146	655	11,612		1	1	0	7/1	12	\$27
University of California Hospital ¹	San Francisco	H C Aaffziger	702	505	8,681	1	0	1	0	7/1	1+	\$85
New Haven Hospital ¹	New Haven, Conn	A Canfield			5,701	6	1	1	0	7/1	1+	\$85
Episcopal Eye, Ear and Throat Hospital	Washington, D C		6,230	2,066	39,471	3	3	0	0	3/1, 7/1	11/1	None
Cook County Hospital ¹	Chicago	J Lifschutz	6,709	6,709	11,612	14	5	0	0	1/1 & 7/1	14	\$25
Illinois Eye and Ear Infirmary ¹	Chicago	H S Gradle	2,886	2,886	130,457	3	3	6	0	1/1 & 7/1	1	None
Michael Reese Hospital ¹	Chicago	J F Strauss	2,439	284	378	5	1	0	0	7/1	1	\$80
Passavant Memorial Hospital ¹	Chicago	J F Delph	246	22	4,939	0	1	0	0	7/1	1	None
Presbyterian Hospital ¹	Chicago	D B Hayden	1,786	22		3	2	0	0	1/1 & 7/1	1	\$80
Research and Educational Hospital ¹	Chicago	F Lederer	697	697		6	1	0	0	7/1	12	\$80
University of Chicago Clinics ¹	Chicago	J R Lindsay	721		12,670	4	1	2	2	7/1	12	None
Indianapolis City Hospital ¹	Indianapolis	R Dearmin	1,587	1,587	7,361	6	1	1	0	7/1	2	\$42
Indiana University Medical Center ¹	Indianapolis	C H McCaskey	701	701	2,247	2	1	1	0	7/1	12	\$81
University Hospitals ¹	Iowa City	D M Lierle	2,093	1,998	6,671	7	1	3	0	7/1	16	\$81
Eye, Ear, Nose and Throat Hospital	New Orleans	F E Le Jeune	3,175		32,789	8	6	6	0	7/1	2	None
Johns Hopkins Hospital ¹	Baltimore	S J Crowe	1,255	915	15,207	1	1	2	0	7/1 & 9/1	14	None
Beth Israel Hospital ¹	Boston	L Arkin and L M										
Lahey Clinic	Boston	Freedman	981	472	5,601		1	0	0	7/1	1	None
Massachusetts Eye and Ear Infirmary	Boston	W B Hoover	500		10,000		0	0	1	7/1	12	\$100
Memorial Hospital ¹	Worcester, Mass	L A Schall	4,179	3,274	43,048	8	7	0	0	Quart	15	None
University Hospital ¹	Ann Arbor, Mich	G Berry	1,445	1,445	3,038	2	1	0	0	7/1	1	\$42
Henry Ford Hospital ¹	Detroit	A C Furstenberg	1,075		9,246	6	1	2	0	7/1	14	\$85
University Hospitals ¹	Minneapolis	J L Dill	46		17,514	2	1	2	0	9/1	3	\$130
Barnes Hospital ¹	St Louis	H Newhart	275		5,334	3	0	0	2	7/1	3	\$80
Jewish Hospital ¹	St Louis	T Walsh	1,225		17,589	8	0	7	0	7/1	13	\$25
St Louis City Hospital ¹	St Louis	S B Westlake	425	94	1,870		1	0	0	7/1	1+	\$70
St Mary's Group of Hospitals ¹	St Louis	A C Stutsman	709	709	8,611	11	1	0	0	7/1	12	\$102
Newark City Hospital ¹	Newark, N J	W E Sauer	977	610	5,018	1	1	0	0	7/1	3	\$85
Albany Hospital ¹	Albany, N Y	W P Eggleton	2,893	2,893			1	0	0	10/1	1	\$20
Brooklyn Eye and Ear Hospital	Brooklyn	H K Tebbutt, Jr	1,019	420	3,157	3	1	0	0	7/1	1	\$25
Jewish Hospital ¹	Brooklyn		5,522	5,522	59,606	4	8	0	0	Quart	2	None
Kings County Hospital ¹	Brooklyn	E L Berger	506		5,904		1	0	0	7/1	1	\$18
Long Island College Hospital ¹	Brooklyn	M C Myerson	3,002	3,002	13,569	13	1	2	0	1/1 & 7/1	2	\$18
Buffalo General Hospital ¹	Buffalo	R L Moorhead	705	675	5,437	2	1	1	0	7/1	12	\$85
Edward J Meyer Memorial Hospital ¹	Buffalo	J F Fairbairn	1,110	530	3,470	2	1	1	0	7/1	12	\$85
Queens General Hospital ¹	Buffalo	J F Fairbairn	616	616	7,604	6	1	2	0	7/1	34	\$80
Bellevue Hospital ¹	Jamaica, N Y	T Oyster	2,057	2,057	7,410	0	1	1	0	7/1	1	\$18
Flower and Fifth Avenue Hospitals ¹	New York City	M S Bender	3,240	3,240	20,023	7	4	0	0	1/1 & 7/1	2	Varies
Harlem Hospital ¹	New York City	J W Fowler	701	311	1,807	1	1	1	0	7/1	2	\$25
Manhattan Eye Ear and Throat Hospital	New York City	J A W Hetrick	1,400	1,400	15,803	2	1	0	0	7/1	1	\$18
Metropolitan Hospital ¹	New York City	H J Hurman	13,715	11,388	78,728	6	8	0	0	Quart	2	None
Mount Sinai Hospital ¹	New York City		1,058	1,058	5,717	3	1	0	0	7/1	1+	\$100
New York City Hospital ¹	New York City				19,421	1	1	0	0	7/1	2	\$80
New York Eye and Ear Infirmary	New York City	H B Judd	1,133	1,133	3,007	0	1	0	0	7/1	1	\$100
Presbyterian Hospital ¹	New York City		3,093		43,649	3	8	0	0	Quart	3	None
Roosevelt Hospital ¹	New York City	J D Kernan	1,618	1,178	21,384	1	5	0	0	1/1 & 7/1	3	None
St Luke's Hospital ¹	New York City	C N Harper	976		7,188	1	0	0	0	7/1	2	None
Strong Memorial and Rochester Municipal Hospitals ¹	New York City	W C Bowers	1,215	823	10,827	1	1	3	0	7/1	3	\$25
Sea View Hospital ¹	Rochester, N Y											
Grasslands Hospital ¹	Staton Island, N Y	C A Healy	1,015	776	6,412		1	1	0	7/1	2	\$12
Cincinnati General Hospital ¹	Valhalla, N Y	M C Myerson	3,032	3,032			2	0	0	1/1 & 7/1	12	\$80
City Hospital ¹	Cincinnati	M T Smith	375	395	3,218	5	1	0	0	7/1	13	\$75
Cleveland Clinic Foundation Hospital	Cleveland	S Igauer	1,548	1,548	7,104	2	1	1	0	7/1	12	\$80
St Luke's Hospital ¹	Cleveland	C W Engler	1,110	1,110	6,429	3	1	1	0	7/1	12	\$10
University Hospitals ¹	Cleveland	P M Moore	814			3	0	0	3	7/1	13	\$85
University of Oregon Medical School Hospitals and Clinics ¹	Cleveland	W H Tuckerman	1,631	493	4,073	3	1	1	0	6/25	2	\$85
George F Giesinger Memorial Hospital ¹	Portland	C Pitkin	2,175	1,264	11,626	3	1	2	0	Varies	2	\$85
Graduate Hospital of the University of Pennsylvania ¹	Portland	R A Fenton	376	376	10,567	4	1	0	0	7/1	1	\$40
Jefferson Medical College Hospital ¹	Danville, Pa	F W Davison	733		5,374	3	1	0	0	7/1	1	\$80
Temple University Hospital ¹	Philadelphia		1,929	1,929	8,607	4	2	0	0	7/1	1	None
	Philadelphia	L H Clerf and H J										
	Philadelphia	Williams	1,312		10,563	0	1	0	0	9/1	1	\$80
	Philadelphia	R F Ridpath and M										
	Philadelphia	S Erner	1,152	1,152	4,226	1	1	0	0	9/1	3	\$10

19. PATHOLOGY

Revision of list is now taking place in collaboration with the American Board of Pathology

		Chief of Service	Inpatient's Treated	Surgical Specimens	Number Examined Microscopically	Autopsy Percentage	Residents	Assistant Residents	Fellow- ships	Service Begins	Length of Service (Years)	Beginning Stipend
Hillman Hospital ¹	Birmingham, Ala	G S Graham	11,293	4,411	2,617	25	1	0	0	7/1	1	\$80
Cedars of Lebanon Hospital ¹	Los Angeles	A H Zeller and L J										
Children's Hospital ¹	Los Angeles	Trigerman	8,113	3,674	2,611	41	1	0	0	7/1	1	\$75
Los Angeles County Hospital ¹	Los Angeles	A Wright	4,734	362	363	91	1	0	0	7/1	13	\$70
St Vincent's Hospital ¹	Los Angeles	N G Evans	48,902	8,992		57	5	0	0	1/1 & 7/1	23	\$10
White Memorial Hospital ¹	Los Angeles	J L Kahler	6,292	2,173	1,600	40						
Highlandameda County Hospital ¹	Oakland, Calif	O B Pratt	7,317	4,795	3,763	41	1	0	0	7/1	1	\$80
Collis P and Howard Huntington Memorial Hospital ¹	Oakland, Calif	G Moore	12,797	4,470	2,412	35	1	1	0	7/1	13	\$10
French Hospital ¹	Pasadena, Calif											
Mount Zion Hospital ¹	San Francisco	A G Food	5,968	2,145	1,709	55	1	0	0	7/1	7	\$100
San Francisco Hospital ¹	San Francisco	D A Wood	3,788	636	373	48	1	0	0	7/1	1	\$80
	San Francisco	G L Rusk	3,959	1,556	912	60	0	1	0	7/15	1	\$80
	San Francisco	G L Rusk and W										
	San Francisco	Dock	16,553	2,279	2,279	56	3	0	1	7/1	1	\$80
Stanford University Hospitals ¹	San Francisco	W Dock	9,756	7,697	3,021	53	0	2	0	7/1	1	\$25
University of California Hospital ¹	San Francisco	C I Connor	7,608	2,117	2,812	67	1	0	0	7/1	1+	\$80
Danver General Hospital ¹	Denver	F Mayner	7,410	3,224	2,332	41	1	0	0	7/1	1	\$80
St Francis Hospital ¹	Hartford, Conn	L P Hastings	10,612	2,717	2,209	22	1	0	0	7/1	1	\$10
New Haven Hospital ¹	New Haven, Conn	M C Winternitz	10,265	5,059	5,059	59	1	1	0	7/1	1+	\$80

19. PATHOLOGY—(Continued)

		Chief of Service	Inpatients Treated	Surgical Specimens	Number of Autopsies	Percentage of Autopsies	Residents	Assistant Residents	Fellowships	Service Begins	Length of Service (Years)	Beginning Stipend
Children's Hospital	Washington, D C	J W Lindsay and E C Rice	6,383	146	32	72	1	0	0	7/1	1	\$80
Gullinger Municipal Hospital *	Washington, D C	E R Whitmore	15,881	1,961	1,668	40	0	1	0	7/1	1	\$25
Garfield Memorial Hospital *	Washington, D C	J W Lindsay	10,834	2,692	900	59	1	0	0	7/1	1	\$80
Georgetown University Hospital *	Washington, D C	V Dardinski	5,919	1,294	421	44	1	0	3	7/1	1	\$80
George Washington University Hospital *	Washington, D C	R M Cholsner	2,009	610	610	44	1	0	2	7/1&9/1	12	\$75
Sibley Memorial Hospital *	Washington, D C	O B Hunter	8,633	2,502	641	43	1	0	0	7/1	1	\$80
Grady Hospital *	Atlanta, Ga	R Mosteller	21,077	6,491	6,491	38	2	0	0	7/1	1+	\$80
University Hospital *	Augusta, Ga	E R Pund	8,495	2,295	1,883	35	1	0	0	7/1	1	\$80
Emory University Hospital *	Emory University, Ga	R R Kraeke	6,495	1,694	1,694	52	1	0	0	7/1	12	\$80
Children's Memorial Hospital *	Chicago	W G Hibbs	4,162	562	365	62	1	0	0	7/1	1	\$80
Cook County Hospital *	Chicago	W Schiller	81,154	8,456	5,974	20	3	0	21	1/1&7/1	13	\$80
Michael Reese Hospital *	Chicago	O Saphir	17,009	3,913	3,913	60	2	0	0	1/1&7/1	12	\$80
Mt Sinai Hospital *	Chicago	I Davidsohn	6,157	3,274	2,335	51	1	1	0	7/1	1	\$80
Passavant Memorial Hospital *	Chicago	F B Queen	5,267	989	977	70	1	0	0	Full	1	None
Presbyterian Hospital *	Chicago	C Apfelbach	11,617	3,046	3,046	64	2	0	0	Varies	1	\$80
Provident Hospital *	Chicago	J H Lewis	3,569	760	760	47	1	0	0	7/1	13	\$80
Research and Educational Hospital *	Chicago	S A Levinson	5,475	4,573	4,573	86	2	0	0	7/1	1	\$80
St Luke's Hospital *	Chicago	E F Hirsch	12,188	4,923	3,903	71	1	0	2	7/1	15	\$80
University of Chicago Clinics *	Chicago	P R Cannon	10,844	2,918	1,723	78	1	0	0	7/1	12	\$25
Vanston Hospital *	Chicago	E L Benjamin	8,291	1,806	1,806	79	1	0	0	10/1	1	\$80
St Francis Hospital *	Chicago	O T Schults	6,263	2,234	475	47	1	0	0	7/1	1	\$80
Methodist Hospital of Central Illinois *	Peoria, Ill	M G Bohrod	5,510	2,381	1,848	42	1	0	0	7/1	1	\$80
St Francis Hospital *	Peoria, Ill	F J Kraus	10,820	2,351	2,351	29	1	0	0	7/1	1	\$80
Indianapolis City Hospital *	Indianapolis	H C Thornton	11,530	2,554	2,504	56	1	0	0	7/1	1	\$80
Indiana University Medical Center *	Indianapolis	F Forry	9,369	3,245	3,220	52	1	3	1	7/1	13	\$63
Methodist Hospital *	Indianapolis	H M Banks	17,033	4,661	4,664	24	3	0	0	7/1	12	\$80
Ball Memorial Hospital *	Muncie, Ind	L G Montgomery	4,878	2,482	2,269	46	1	0	0	7/1	1+	\$75
Fpworth Hospital *	South Bend, Ind	A S Giordano	16,823	2,677	1,251	33	1	0	0	7/1	1+	\$100
University Hospital *	Iowa City	H P Smith	18,561	2,885	2,853	55	1	0	0	7/1	16	\$21
University of Kansas Hospitals *	Kansas City, Kan	H R Wahl	6,015	3,570	3,473	68	1	2	0	7/1	13	\$80
St Francis Hospital *	Webster, Kan	C A Hellwig	6,425	3,145	3,145	47	1	0	0	7/15	1	\$100
Louisville City Hospital *	Louisville, Ky	A J Miller	12,422	2,075	2,020	40	1	1	0	7/1	12	\$14
Charity Hospital *	New Orleans	E S Moss	57,794	11,200	11,200	47	0	2	0	7/1	13	\$75
Touro Infirmary *	New Orleans	S H Colvin, Jr	11,813	2,942	2,942	71	2	0	0	7/1	1	\$80
Baltimore City Hospitals *	Baltimore	F B Kindell	8,969	1,153	1,145	47	1	1	0	7/1	1	\$19
Johns Hopkins Hospital *	Baltimore	W G McCallum	16,141	3,831	3,831	73	1	2	0	7/1&9/1	1+	None
Boston City Hospital *	Boston	F Parker, Jr	44,875	4,440	4,440	47	5	0	0	Varies	1+	None
Boston Lying In Hospital *	Boston	A P Hertig	5,925	4,440	4,440	69	1	0	0	1/1&7/1	1	\$80
Children's Hospital *	Boston	S B Wallbach	9,608	768	768	69	1	0	0	7/1	1	\$80
Massachusetts General Hospital *	Boston	T B Mallory	7,591	7,170	7,150	63	1	0	0	7/1	1	\$12
Massachusetts Memorial Hospitals *	Boston	C F Branch	6,945	1,540	1,540	76	1	0	2	7/1	12	\$80
New England Deaconess Hospital *	Boston	S Warren	7,778	5,545	5,535	48	1	2	0	7/1	12	\$80
Peter Bent Brigham Hospital *	Boston	S D Wolbach	5,749	1,972	1,942	62	1	0	1	2/1&7/1	13	\$12
Worcester City Hospital *	Worcester, Mass	R H Goodale	10,371	3,540	3,100	64	1	0	0	7/1	1	None
Worcester State Hospital *	Worcester, Mass	W Freeman	777	58	58	65	2	0	0	1/1&7/1	1	None
University Hospital *	Ann Arbor, Mich	C V Weller	16,355	6,426	6,420	69	0	1	0	7/1	1	\$17
City of Detroit Receiving Hospital *	Detroit	O A Brines	18,896	2,746		99	0	1	0	7/1	1	\$75
Harper Hospital *	Detroit	P R Morse	17,667			76	0	1	0	7/1	1	\$80
Henry Ford Hospital *	Detroit	T W Hartman	12,800	3,774	3,774	57	2	0	1	7/1	13	\$100
Providence Hospital *	Detroit	D H Kaump	10,750	3,309	3,309	53	1	0	0	7/1	1	\$100
Woman's Hospital *	Detroit	C C Beaver	7,229	3,537	3,403	53	1	0	0	7/1	1	\$80
Hoise Hospital and Infirmary *	Flint, Mich	S J Gould	9,024	1,443	1,443	38	1	1	1	7/1	12	\$80
Hurley Hospital *	Flint, Mich	G R Backus	10,787	4,756		34	1	0	0	7/1	1	\$12
St Luke's Hospital *	Duluth, Minn	A H Wells	6,770	1,733	1,600	68	1	0	0	7/1	13	\$20
Mayo Foundation	Rochester, Minn	(See page 788)										
Sacker Hospital *	St Paul	J F Noble	10,945	1,440	1,208	69	1	0	0	7/1	1	\$80
Kansas City General Hospital *	Kansas City, Mo	J Buhler	11,274	2,252	2,110	78	2	0	0	7/1	13	\$80
St Joseph Hospital *	Kansas City, Mo	R W Kerr	6,864	3,091	2,277	74	1	0	0	7/1	1	\$80
St Luke's Hospital *	Kansas City, Mo	F C Helwig	5,676	3,580	2,910	74	1	0	0	7/1	12	\$80
Burns Hospital *	St Louis	R A Moore	10,643	2,015	2,015	64	1	0	0	7/1	1	\$80
Jewish Hospital *	St Louis	S H Gray	6,611	1,549	1,549	35	0	1	0	7/1	1	\$80
St Louis City Hospital *	St Louis	S H Gray	16,176	2,479	2,479	48	1	0	0	7/1	13	\$12
Crichton Memorial St Joseph's Hospital *	Omaha	B C Russell	8,356	7,800	6,524	29	1	0	0	7/1	1	\$80
University of Nebraska Hospital *	Omaha	J P Tolman	3,448	1,217	1,217	66	1	0	0	7/1	13	\$80
Mary Hitchcock Memorial Hospital *	Hanover, N H	R F Miller	4,686	674	779	78	1	1	0	7/1	1	\$80
Newark Beth Israel Hospital *	Newark, N J	W Antopol	10,637	3,947	3,771	29	1	1	1	7/1	2	\$80
Albany Hospital *	Albany, N Y	A W Wright	11,610	7,717	7,717	73	1	5	0	7/1	1	\$100
Bender Hygiene Laboratory	Albany, N Y	J J Clemmer		6,310	6,310		1	1	0	7/1	1	\$80
Brooklyn Hospital *	Brooklyn	J A de Veer	7,349	2,186	2,186	44	1	0	0	7/1	1	\$80
Cumberland Hospital *	Brooklyn	S H Polayes	7,807	1,692	1,692	50	1	0	0	7/1	1	\$80
Israel Zion Hospital *	Brooklyn	J M Ravid	10,187	2,364	2,364	28	1	0	0	7/1	1	\$80
Jewish Hospital *	Brooklyn	M J Federer	12,725	7,368	6,778	47	1	1	0	7/1	1	\$80
Kings County Hospital *	Brooklyn	W W Hala	57,696	13,439	13,439	23	1	4	0	7/1	12	\$80
Long Island College Hospital *	Brooklyn	J R Oliver	8,275	2,674	2,674	33	1	0	0	7/1	1	\$80
St John's Hospital *	Brooklyn	J Dorkeloh	5,677	1,088	1,068	44	1	0	0	7/1	1	\$80
Buffalo General Hospital *	Buffalo	K Terplan	11,890	7,000	7,000	49	2	2	0	7/1	12	\$80
Edward I Meyer Memorial Hospital *	Buffalo	W T Jacobs	9,872	2,226	2,596	33	1	3	0	7/1	1	\$80
Willard Fillmore Hospital *	Buffalo	N Flton	7,776	4,780	4,279	44	1	0	0	7/1	1	\$80
Meadowbrook Hospital *	Hempstead, N Y	T J Curphey	5,830	1,771	1,729	72	2	0	0	7/1	1	\$80
Queens General Hospital *	Jamaica, N Y	A A Angrist	13,963	2,892	2,892	67	1	1	0	7/1	1	\$80
Forlham Hospital *	New York City	L R Ferraro	12,675	2,252	2,000	33	1	0	0	7/1	1	\$80
Harlem Hospital *	New York City	S Weintraub	20,750	2,780	2,780	26	1	1	1	1/1&7/1	1	\$80
Ieno Hill Hospital *	New York City	G L Roldenburg	10,744	2,096	2,096	58	1	0	0	7/1	1	\$80
Lincoln Hospital *	New York City	C Brown	10,587	1,984	1,973	31	2	0	0	7/1	1+	\$80
Metropolitan Hospital *	New York City	A Saccione	12,640	1,421	1,400	71	1	0	0	7/1	1	\$80
Montefiore Hospital for Chronic Diseases *	New York City	D Marine	1,787	385	375	71	1	0	0	7/1	1	\$80
Morrisania City Hospital *	New York City	W Aranson	12,543	1,905	1,908	71	1	0	0	1/1&7/1	1	\$80
Mount Sinai Hospital *	New York City	P Klempere	16,944	6,711	6,711	45	0	2	0	7/1	1	\$100
New York City Hospital *	New York City	I R Lisa	10,490	1,581	1,296	42	1	0	1	7/1	1	\$80
New York Hospital *	New York City	J Ople	16,412	5,000	3,838	64	1	0	0	7/1	12	\$80
New York Post Graduate Medical School and Hospital *	New York City	M N Rehter	2,179	5,590		77	1	2	0	1/1&7/1	1	\$80
Presbyterian Hospital *	New York City	I W Joelling	18,017	3,771	3,770	49	1	0	0	7/1	1	\$80
Roosevelt Hospital *	New York City	W W Brande	7,769	2,663	2,663	45	1	0	0	7/1	12	\$100
St Luke's Hospital *	New York City	F C Wood	8,515	2,493	2,497	51	1	0	0	7/1	1	\$80
St Vincent's Hospital *	New York City	A Rottino	9,261	1,566	1,566	39	1	0	0	1/1&7/1	1	\$80
Sydenham Hospital *	New York City	A M Ginzler	4,484	1,410	1,414	51	1	0	0	7/1	1+	\$80
Willard Parker Hospital	New York City	T B Dolgopul	9,915	21	21	49	1	0	0	7/1	1	\$80
Rochester General Hospital *	Rochester, N Y	I Gaspar	8,127	6,125	5,299	61	1	0	0	7/1	1	\$80

19. PATHOLOGY—(Continued)

	Chief of Service	Inpatients Treated	Surgical Specimens Number	Examined Microscopically	Autopsies Percentage	Residents	Assistant Residents	Fellow-ships	Service Begins	Length of Service (Years)	Declining Stipend
Strong Memorial and Rochester Municipal Hospitals *	Rochester, N. Y. G. H. Whipple	14,494	3,226	3,226	73	2	1	2	7/1	1-2	\$12
Grasslands Hospital *	Valhalla, N. Y. G. Daldorf	5,336	1,872	1,779	64	2	0	0	1/1&7/1	1-2	\$118
Duke Hospital *	Durham, N. C. W. D. Forbus	11,800	14,166	14,166	60	0	1	6	7/1	1-3	None
Christ Hospital *	Cincinnati, O. J. W. Leichliter	8,468	1,303	1,326	40	1	0	0	6/23	1-2	\$75
Cincinnati General Hospital *	Cincinnati, O. R. S. Austin	16,248	2,241	2,241	51	6	0	0	7/1	1-3+	\$45
City Hospital *	Cleveland, O. H. T. Karsner	12,632	2,730	1,778	44	1	4	0	7/1	1-2	\$50
Mount Sinai Hospital *	Cleveland, O. B. S. Kline	8,044	2,393	2,393	35	1	0	1	7/1	1-2	\$50
St. Luke's Hospital *	Cleveland, O. R. Dominguez	10,074	2,688	2,460	43	1	1	0	7/1	1-2	\$50
St. Vincent Charity Hospital *	Cleveland, O. D. J. Rehhoek	7,190	1,386	1,337	36	1	0	0	7/1	1-2	\$50
University Hospitals *	Cleveland, O. H. Karsner	18,902	4,057	4,037	60	1	1	0	7/1	1-2	\$50
Starling-Loving University Hospital *	Columbus, O. H. L. Rinehart	6,491	2,328	2,229	62	1	1	0	7/1	1-2	\$50
White Cross Hospital *	Columbus, O. R. S. Fidler	7,092	3,544	.....	41	1	0	0	7/1	1-2	\$50
Miami Valley Hospital *	Dayton, O. W. M. Simpson	10,317	4,447	4,447	33	1	0	0	7/1	1-2	\$50
Youngstown Hospital *	Youngstown, O. G. B. Kramer	12,203	3,711	3,041	32	1	0	0	7/1	1-2	\$50
University Hospitals *	Oklahoma City, Okla. H. G. Jeter	5,420	2,131	1,712	56	1	0	1	7/1	1-2	\$50
St. Vincent's Hospital *	Portland, Ore. T. D. Roberson	9,349	4,463	3,153	50	1	0	0	6/15	1-2	\$25
University of Oregon Medical School Hospitals and Clinics *	Portland, Ore. F. R. Menne	8,819	1,836	1,836	58	5	0	0	7/1	1-2	\$10
Abington Memorial Hospital *	Abington, Pa. J. Eiman	6,311	1,978	1,939	66	1	0	0	10/1	1-2	\$100
George P. Geisinger Memorial Hospital *	Danville, Pa. H. F. Hunt	5,024	1,401	1,352	44	1	0	0	7/1	1-2	\$50
Pittsburgh City Home and Hospitals *	Mayview, Pa. G. H. Fetterman	1,050	1,383	1,383	20	1	1	0	9/1	1-2	\$150
Germantown Dispensary and Hospital *	Philadelphia, Pa. F. B. Lynch Jr.	6,720	1,364	737	36	1	0	0	8/1	1-3	\$125
Graduate Hospital of the University of Pennsylvania *	Philadelphia, Pa. E. A. Cline	6,322	1,817	1,815	50	1	0	0	7/1	1-2	None
Hahnemann Hospital *	Philadelphia, Pa. S. W. Sappington	12,532	4,026	2,839	49	0	1	0	9/1	1-2	\$50
Hosp. of the University of Pennsylvania *	Philadelphia, Pa. F. B. Krumhaar	10,780	3,814	3,198	56	1	0	0	7/1	1-2	None
Jewish Hospital *	Philadelphia, Pa. E. Steinfield	8,073	2,100	2,100	60	1	0	0	6/15	1-2	None
Mount Sinai Hospital *	Philadelphia, Pa. D. R. Meranze	6,802	2,100	2,100	50	1	0	0	6/15	1-2	\$25
Pennsylvania Hospital *	Philadelphia, Pa. J. T. Bauer	8,562	1,936	1,936	60	2	0	0	7/1&9/1	1-2	\$20
Philadelphia General Hospital *	Philadelphia, Pa. J. H. Clark	26,034	3,015	2,908	60	2	1	0	7/1&8/1	1-2	\$50
Presbyterian Hospital *	Philadelphia, Pa. R. P. Custer	4,983	1,362	1,362	82	1	0	0	6/1	3	\$50
Temple University Hospital *	Philadelphia, Pa. L. W. Smith	10,042	16,030	16,030	69	2	0	0	9/1	3	\$40
Allegheny General Hospital *	Pittsburgh, Pa. S. R. Haythorn	9,332	1,996	1,996	34	2	0	0	9/1	1-2	\$50
Children's Hospital *	Pittsburgh, Pa. M. Menten	3,901	137	137	45	0	1	0	9/1	1-2	\$15
Elizabeth Steel Mages Hospital *	Pittsburgh, Pa. M. Cohen	6,381	1,778	1,778	32	2	0	0	9/1	1-2	\$42
Mersey Hospital *	Pittsburgh, Pa. H. H. Permr	12,843	3,350	3,183	37	2	0	0	9/1	1-2	\$90
Montefiore Hospital *	Pittsburgh, Pa. K. Yardumian	6,203	1,534	1,534	44	1	0	0	9/1	1-3	\$50
Presbyterian Hospital *	Pittsburgh, Pa. G. R. Lacy	3,265	888	.....	34	2	0	0	9/1	1-3	\$42
St. Francis Hospital *	Pittsburgh, Pa. A. J. Bruecken	12,708	4,271	2,520	21	4	0	0	9/1	1-2	\$65
Western Pennsylvania Hospital *	Pittsburgh, Pa. P. Gross	10,290	1,925	1,925	26	1	0	0	7/1	1-2	\$75
Reading Hospital *	Reading, Pa. E. D. Funk	5,612	2,150	1,378	63	1	0	0	0/1	1-2	\$30
Rhode Island Hospital *	Providence, R. I. B. E. Clarke	8,721	2,711	2,711	62	1	0	0	7/1	1-2	\$50
John Gaston Hospital *	Memphis, Tenn. H. C. Schmeisser	15,330	1,818	2,518	25	1	1	0	7/1	1-2	\$50
Nashville General Hospital *	Nashville, Tenn. W. A. DeMonbreun	6,765	2,104	1,094	43	1	0	0	7/1	1-2	\$50
Vanderbilt University Hospital *	Nashville, Tenn. E. W. Goodpasture	6,295	2,637	1,483	62	1	2	0	7/1	1-2	\$35
Baylor University Hospital *	Dallas, Tex. G. T. Caldwell	11,821	4,297	4,293	31	1	0	0	7/1	1-2	\$50
Parkland Hospital *	Dallas, Tex. A. B. Cairns	9,639	2,664	2,144	31	1	0	0	7/1	1-2	\$35
Jefferson Davis Hospital *	Houston, Tex. D. G. Henderson	14,305	2,478	2,478	28	1	0	0	7/1	1-2	\$50
Mary Fletcher Hospital *	Burlington, Vt. E. H. Buttles	10,579	1,733	1,385	37	0	1	1	7/1	1-2	\$100
Medical College of Virginia, Hosp. Division *	Richmond, Va. F. L. Apperty	10,142	4,230	4,135	37	0	1	0	7/1	1-2	\$113
Charleston General Hospital *	Charleston, W. Va. W. Putzchar	8,917	2,788	1,903	37	1	1	0	7/1	1-3	\$25
State of Wisconsin General Hospital *	Madison, Wis. C. H. Bunting	14,636	3,392	3,392	75	1	1	1	7/1	3	\$25
Columbia Hospital *	Milwaukee, Wis. C. H. Hansmann	3,267	1,414	977	48	1	0	0	7/1	3	\$25
St. Joseph's Hospital *	Milwaukee, Wis. J. C. Grill	8,027	1,861	1,814	31	1	0	0	6/15	1-2	\$100
Milwaukee County Hospital *	Wauwatosa, Wis. J. C. Grill	17,312	1,939	1,814	38	1	1	0	7/1&7/15	1-2	\$30
Queen's Hospital *	Honolulu, T. H. N. P. Larsen	10,350	.....	.....	73	1	0	0	9/1	1-3	\$200

20. PEDIATRICS

Revision of list is now taking place in collaboration with the American Board of Pediatrics

	Chief of Service	Inpatients Treated	Service or House Calls	Outpatient Visits	Autopsies	Residents	Assistant Residents	Fellow-ships	Service Begins	Length of Service (Years)	Declining Stipend
Children's Hospital	Birmingham, Ala. A. A. Walker	1,236	883	8,592	15	2	0	0	7/1	1-2	\$38
Hillman Hospital *	Birmingham, Ala. A. A. Walker	905	905	3,908	31	1	0	0	7/1	1-2	\$50
California Babies' and Children's Hospital *	Los Angeles, Cal. J. B. Johnson	636	636	15,103	0	2	0	0	7/1	1-2	\$100
Children's Hospital *	Los Angeles, Cal. V. E. Stork	1,636	1,142	39,631	114	2	8	0	1/1&7/1	1-3	\$40
Los Angeles County Hospital *	Los Angeles, Cal. E. R. Moody	2,372	2,372	4,430	84	3	0	0	4/1	2-3	\$10
White Memorial Hospital *	Los Angeles, Cal. M. B. Brooks	216	.....	8,477	8	1	0	0	7/1	3	\$40
Children's Hospital of the East Bay *	Oakland, Calif. C. Sweet	2,290	1,233	18,003	20	1	1	0	7/1	1-2	\$15
Hospital for Children *	San Francisco, Cal. C. F. Gelston	617	228	8,654	.....	0	1	0	7/1	1-2	\$35
San Francisco Hospital *	San Francisco, Cal.	959	959	.....	.....	1	0	0	7/1	1-2	\$50
Stanford University Hospitals *	San Francisco, Cal. H. K. Faber	494	483	17,803	7	1	2	0	7/1	1-2	\$25
University of California Hospital *	San Francisco, Cal. F. S. Smyth	588	575	12,509	21	1	2	0	7/1	1-4	\$25
Children's Hospital *	Denver, Colo.	3,245	2,245	.....	53	4	0	0	7/1	1-2	\$50
Denver General Hospital *	Denver, Colo. W. Jones	1,351	1,381	.....	29	1	0	0	1/1	1-2	\$50
New Haven Hospital *	New Haven, Conn. G. F. Powers	1,636	.....	13,936	41	3	0	0	7/1	1-2	\$50
Children's Hospital *	Washington, D. C. J. S. Wall	7,873	5,965	71,184	148	12	0	0	1/1&7/1	1-2	\$10
Freedmen's Hospital *	Washington, D. C. A. DeG. Smith	932	932	2,130	19	1	0	0	7/1	1-2	\$10
Gallinger Municipal Hospital *	Washington, D. C. W. M. Yater	876	876	4,371	36	1	1	0	7/1	1-2	\$15
Gandy Hospital *	Atlanta, Ga. W. W. Anderson and M. H. Roberts	1,271	1,271	22,953	63	2	4	0	7/1	1-2	\$20
Henrietta Eggleston Hospital for Children *	Atlanta, Ga. M. H. Roberts	1,251	769	.....	22	3	0	0	1/1&7/1	1-2	\$10
University Hospital *	Augusta, Ga. C. M. Burpee	813	.....	1,923	16	1	1	0	7/1	1-2	\$25
Children's Memorial Hospital *	Chicago, Ill. C. A. Aldrich	4,318	4,059	61,641	69	4	13	0	1/1&7/1	1-2	None
Cook County Hospital *	Chicago, Ill. M. L. Blatt	10,292	10,292	40,992	226	8	0	3	1/1&7/1	1-15	\$25
Michael Reese Hospital *	Chicago, Ill. J. R. Gerstley	1,372	816	1,012	98	2	0	0	1/1&7/1	1-2	\$50
Presbyterian Hospital *	Chicago, Ill. C. G. Grulee	1,038	505	.....	39	1	3	0	7/1	1-2	\$50
Provident Hospital *	Chicago, Ill. F. W. Beasley	233	.....	6,335	6	1	0	2	7/1	1-3	\$50
Research and Educational Hospital *	Chicago, Ill. J. Hess	233	233	.....	21	2	0	0	7/1	1-2	\$50
St. Vincent's Infant and Maternity Hospital	Chicago, Ill. M. L. Blatt	710	710	.....	7	2	0	0	7/1	1-2	\$50
University of Chicago Clinics *	Chicago, Ill. F. W. Schlutz	1,074	1,074	15,733	22	1	8	0	1/1&7/1	1-3	None
Indianapolis City Hospital *	Indianapolis, Ind. J. C. Carter	763	763	9,755	71	1	0	0	7/1	1-2	\$12
Indiana University Medical Center *	Indianapolis, Ind. M. Winters	1,421	.....	3,941	48	1	1	0	7/1	1-2	\$3

20. PEDIATRICS—(Continued)

		Chief of Service	Inpatients Treated	Service or House Cases	Outpatient Visits	Autopsies	Residents	Assistant Residents	Fellow- ships	Service Begins	Length of Service (Years)	Beginning Stipend
University Hospitals * ¹	Iowa City	P. C. Jenks	802	819	2,134	37	1	2	0	7/1	1-6	\$21
University of Kansas Hospitals * ¹	Kansas City, Kan.	F. C. Neff	804	2,259	35	1	0	0	0	7/1	1	\$30
Louisville City Hospital * ¹	Louisville, Ky.	J. W. Bruce	2,631	2,651	10,136	36	1	3	0	7/1	1-3	\$4
Charity Hospital * ¹	New Orleans	E. A. Socola and R. H. Strong	2,566	2,566	20,076	92	3	4	0	7/1	1-3	\$25
Touro Infirmary *	New Orleans	J. Graubarth	488	.....	11,312	15	1	2	0	7/1	1	\$22
Baltimore City Hospitals *	Baltimore	T. C. Goodwin	345	345	.....	33	1	1	0	7/1	1	\$15
Johns Hopkins Hospital * ¹	Baltimore	E. A. Park	1,084	918	38,150	71	1	4	0	7/1 & 9/1	1-6	Noae
Union Memorial Hospital * ¹	Baltimore	D. C. W. Smith	1,202	.....	2,834	4	1	1	0	7/1	1-2	\$30
University Hospital * ¹	Baltimore	C. L. Joslin	629	.....	15,369	68	1	2	0	7/1	1-4	Noae
Boston City Hospital * ¹	Boston	M. J. English	5,160	5,160	11,296	130	1	0	0	Varies	1+	\$83
Boston Floating Hospital * ¹	Boston	F. W. Barron	1,065	996	11,898	21	0	4	0	Varies	1	\$10
Children's Hospital	Boston	K. D. Blackfan	1,714	824	25,478	39	4	0	0	1/1, 5/1, 9/1	1 1/2	Noae
Massachusetts General Hospital * ^{1, 2, 3, 4}	Boston	H. H. Higgins	408	.....	6,455	22	1	0	0	10/1	2	\$12
University Hospital * ¹	Ann Arbor, Mich.	C. F. McKhann	530	.....	3,617	27	1	4	0	7/1	1-3	\$25
Children's Hospital * ¹	Detroit	T. B. Cooley	3,817	.....	18,265	144	2	14	0	7/1	1-2	\$25
Henry Ford Hospital *	Detroit	J. A. Johnston	1,062	.....	10,263	21	3	0	0	7/1	2	\$130*
Minneapolis General Hospital * ¹	Minneapolis	A. V. Stoesser	1,552	1,522	9,553	37	0	1	3	7/1	1-3	\$25
University Hospitals * ¹	Minneapolis	I. McQuarrie	1,841	.....	5,603	86	0	0	3	7/1	3	\$30
Mayo Foundation	Rochester, Minn.	(See page 788)										
Children's Mercy Hospital * ¹	Kansas City, Mo.	C. B. Summers	2,071	2,071	15,276	108	3	0	0	7/1	1	\$25
Kansas City General Hospital *	Kansas City, Mo.	H. Gilkey	2,327	2,327	1,007	62	1	0	0	7/1	1-2	\$30
Wheatley-Provident Hospital	Kansas City, Mo.	F. S. Hogue	107	.....	923	1	2	0	0	3/1	1	\$63
Hoover G. Phillips Hospital * ¹	St. Louis	W. A. Rupe	1,675	1,675	2,131	62	1	2	0	7/1	1-3	\$75
St. Louis Children's Hospital * ¹	St. Louis	A. F. Hartmann	3,599	2,673	.....	62	1	10	1	7/1	1	\$25
St. Louis City Hospital *	St. Louis	J. C. Jaudon	1,705	1,705	5,142	39	1	1	0	7/1	1-2	\$30
St. Mary's Group of Hospitals *	St. Louis	J. Zahorsky	1,233	.....	10,112	17	0	0	2	7/1	3	\$25
Jersey City Hospital *	Jersey City, N. J.		1,124	1,004	2,006	11	1	1	0	7/1	1+	\$75
Albany Hospital * ¹	Albany, N. Y.	H. L. K. Shaw	522	372	1,532	18	1	1	0	7/1	1	\$25
Cumberland Hospital *	Brooklyn	T. B. Givan	1,611	1,611	8,200	41	1	1	0	1/1 & 7/1	1	\$15
Jewish Hospital * ¹	Brooklyn	B. Kramer	688	2,689	8,920	52	1	2	0	7/1	1	\$25
Kings County Hospital *	Brooklyn	G. Brockway and L. Krahulik	2,810	2,810	9,909	86	2	2	0	7/1	2	\$15
Long Island College Hospital * ¹	Brooklyn	C. A. Weymuller	524	499	13,113	29	1	2	0	7/1	2	\$23
Norwegian Lutheran Deaconesses' Home and Hospital * ¹	Brooklyn	C. M. Fisher and J. A. Monfort	343	.....	2,321	..	1	0	0	7/1	1	None
Children's Hospital * ¹	Buffalo	D. P. Arnold	4,830	.....	34,430	69	1	4	0	7/1	1	\$25
Edward J. Meyer Memorial Hospital * ¹	Buffalo	F. J. Gustina	154	154	3,019	5	1	2	0	7/1	3-5	\$30*
Queens General Hospital * ¹	Jamaica, N. Y.	H. A. Reisman	2,066	2,066	5,636	94	2	2	0	7/1	1	\$18
Babies Hospital	New York City	R. McIntosh	1,452	.....	.....	..	1	11	0	7/1	1	\$30
Bellevue Hospital * ¹	New York City	C. H. Smith	3,499	3,499	43,963	86	1	0	0	1/1 & 7/1	1-2	\$33
Flower and Fifth Avenue Hospitals * ¹	New York City	R. A. Benson	317	278	2,664	28	1	0	0	7/1	1	\$25
Harlem Hospital * ¹	New York City	M. Gleich	1,325	1,325	14,725	33	1	0	0	7/1	1	\$18
Lincoln Hospital *	New York City	A. T. Martin	888	888	7,346	13	1	0	0	7/1	1+	None
Metropolitan Hospital * ¹	New York City	R. A. Benson	1,247	1,247	6,911	27	1	1	0	7/1	1+	\$18
Morrisania City Hospital *	New York City	L. H. Barenberg	809	809	3,614	17	1	1	0	1/1 & 7/1	1	\$18
Mount Sinai Hospital * ^{1, 10}	New York City		.....	.....	32,035	..	1	1	0	1/1 & 7/1	1	\$30
New York City Hospital *	New York City	C. S. Boyd	760	760	3,687	40	1	0	0	7/1	1	\$100
New York Foundling Hospital * ^{1, 2, 7}	New York City		1,916	1,916	9,110	27	1	3	0	1/1 & 7/1	1-2	\$25
New York Hospital *	New York City	S. Z. Levine	1,241	943	31,549	79	1	5	0	1/1 & 7/1	1-4	\$25
New York Post-Graduate Medical School and Hospital *	New York City	A. G. De Sanetis	1,122	909	24,576	5	1	1	0	1/1 & 7/1	1-2	None
St. Luke's Hospital * ¹	New York City	F. E. Johnson	494	445	7,046	16	1	1	0	1/1	1-2	\$5
Strong Memorial and Rochester Municipal Hospitals *	Rochester, N. Y.	S. W. Clausen	1,366	1,024	16,537	52	2	3	0	7/1	1-4	\$12
Sea View Hospital * ^{1, 2, 3}	Staten Island, N. Y.	B. Schiek	377	377	.....	3	4	0	0	1/1 & 7/1	1+	\$100
Syracuse Memorial Hospital *	Syracuse, N. Y.	B. Doust	1,150	605	.....	14	1	0	0	7/1	1	None
Grasslands Hospital * ¹	Yaphank, N. Y.	F. D. Barnes	515	515	1,635	15	1	1	0	1/1 & 7/1	1-2	\$75
Duke Hospital * ¹	Durham, N. C.	W. C. Davison	832	822	7,645	56	1	2	6	7/1	1-3	None
Watts Hospital *	Durham, N. C.	B. W. Roberts	731	292	1,595	4	0	1	0	7/1	1	\$25
Children's Hospital	Akron, O.		1,567	.....	10,825	33	1	0	0	7/1	1-2	\$15
Children's Hospital * ¹	Cincinnati	A. G. Mitchell	4,672	2,636	25,950	52	7	9	0	7/1	2	\$25
Cincinnati General Hospital * ¹	Cincinnati	A. G. Mitchell	1,315	1,315	8,372	64	7	8	0	7/1	1-3+	\$
University Hospitals * ¹	Cleveland	H. J. Gerstenberger	1,182	755	25,159	51	1	2	0	7/1	2	\$25
Children's Hospital * ¹	Columbus, O.	F. H. Baxter	2,784	.....	65,383	51	4	0	0	7/1	1-2	\$25
University Hospitals * ¹	Oklahoma City	C. H. Hall	437	406	4,364	25	1	0	0	7/1	1	\$30
University of Oregon Medical School Hospitals and Clinics * ¹	Portland	J. B. Bilderhaeh	2,818	2,818	8,063	64	1	0	0	7/1	1	\$10
Children's Hospital * ¹	Philadelphia	J. Stokes, Jr.	2,223	1,983	39,934	39	1	10	0	7/1	1-3	None
Children's Hospital of the Mary J. Drexel Home * ¹	Philadelphia	H. C. Abernathy	937	.....	13,910	8	1	0	0	7/1	1	\$100
Hahnemann Hospital *	Philadelphia	C. S. Raue	725	.....	6,156	21	0	1	0	9/1	1	\$30
Hospital of the University of Pennsylvania *		J. Stokes	314	.....	4,484	13	1	0	0	7/1	1	None
Jewish		M. Solis-Cohen	526	.....	697	37	1	0	0	6/15	1-2	None
Philadelphia			1,973	1,973	4,812	..	1	0	0	7/1 & 8/1	1-2	\$100
St. Christopher's Hospital for Children * ¹	Philadelphia	F. Krauss	1,950	.....	58,327	33	1	4	0	9/1	1	\$30
Temple University Hospital * ¹	Philadelphia	W. F. Nelson	350	350	5,716	15	2	0	0	9/1	3	\$25
Children's Hospital * ¹	Pittsburgh	H. T. Price	1,985	1,570	5,915	65	1	3	0	9/1	1	\$25
Roper Hospital *	Charleston, S. C.	M. W. Beach	664	465	7,569	37	1	1	1	7/1	1-3	\$10
T. C. Thompson Children's Hospital * ¹	Chattanooga, Tenn.	W. E. Van Order	730	680	17,660	23	1	1	0	7/1	1-2	\$20
John Gaston Hospital *	Memphis, Tenn.	A. J. Jacobs	1,521	.....	6,657	40	1	0	0	7/1	1	\$65
George W. Hubbard Hospital of Meharry Medical College * ¹	Nashville, Tenn.	J. W. Jones	475	.....	3,020	10	1	0	0	7/1	1-2	\$75
Vanderbilt University Hospital * ¹	Nashville, Tenn.	H. R. Casparis	675	550	11,980	62	1	3	0	7/1	1+	\$15
Children's Memorial Medical Center * ^{1, 2}	Dallas, Tex.	H. L. Moore	1,694	.....	29,892	20	1	7	0	7/1	3	\$25
John Sealy Hospital * ¹	Galveston, Tex.	B. Reading	645	.....	7,869	20	1	2	0	7/1	1-3	\$25
University of Virginia Hospital *	Charlottesville	L. T. Royster	1,212	1,212	5,083	23	1	0	0	7/1	1	\$25
Medical College of Virginia, Hospital Div.	Richmond	L. E. Sutton	392	.....	8,895	62	1	0	0	7/1	3	\$25
State of Wisconsin General Hospital * ¹	Madison	J. E. Gonoe	684	.....	2,427	15	1	0	0	7/1	3	\$25
Milwaukee Children's Hospital	Milwaukee											
Milwaukee County Hospital * ¹	Milwaukee, Wis.	R. P. Schowalter	2,466	2,466	8,112	17	2	0	0	7/1 & 7/15	1-3	\$30

21. PHYSICAL THERAPY

Stanford University Hospitals * ^{1, 2, 4}	San Francisco	W. Northway	2,751	2	5,073	..	1	0	0	7/1	1	\$25
Michael Reese Hospital * ¹	Chicago	C. O. Molander	294	.....	5,690	..	1	0	0	7/1	1	...
Mayo Foundation	Rochester, Minn.	(See page 788)										

22. PLASTIC SURGERY

	Chief of Service	Inpatients Treated	Service or House Cases	Outpatient Visits	Autopsies	Residents	Assistant Residents	Fellow- ships	Service Begins	Length of Service (Years)	Beginning Stipend
..... Rochester, Minn.....	(See page 788)										
*1..... Brooklyn.....	W. A. Coakley.....	925	.....	2,309	4	1	1	0	7/1	2	\$18
*..... New York City.....	A. O. Whipple.....	.....	.....	.....	1	1	1	0	7/1	1	None
..... the University of Philadelphia.....	R. H. Ivy.....	238	238	602	1	1	0	0	7/1	1	None

23. PSYCHIATRY

Revision of list is now taking place in collaboration with the American Board of Psychiatry and Neurology

Compton Sanitarium.....	Compton, Calif.....	G. Meyers.....	396	396	.....	1	0	0	Varies	1+	\$200	
Stanford University Hospitals *1,12.....	San Francisco.....	G. Johnson.....	438	316	9,583	5	1	2	0	7/1	1-2	\$25
University of California Hospital *1.....	San Francisco.....	W. J. Kerr.....	96	76	2,687	1	0	1	0	7/1	1+	\$25
Mendocino State Hospital *1.....	Talmage, Calif.....	R. O. Le Baron.....	3,549	.....	50	52	2	0	0	Varies	1+	\$30
..... Hospital *1.....	Denver.....	F. G. Ebaugh.....	944	944	6,169	13	2	0	6	9/1	1-3	\$100
..... of the Hartford.....	Pueblo.....	F. H. Zimmerman.....	4,533	4,533	.....	33	8	0	0	Varies	1+	\$150
Retreat *1.....	.....	C. C. Burlingame.....	873	873	.....	4	0	0	6	Varies	1 1/2	\$225
Connecticut.....	.....	R. L. Leak.....	4,442	4,442	45	74	3	0	0	Varies	1+	\$54
New Haven.....	.....	E. Kahn.....	310	.....	4,038	3	1	7	0	7/1	1+	*
Delaware State Hosp.....	.....	M. A. Tarumian.....	1,141	1,141	1,917	30	2	0	0	1/1	1-2	\$50
Gallinger Municipal.....	.....	J. L. Gilbert.....	3,230	3,230	.....	54	0	1	0	7/1	1	\$23
St. Elizabeths Hospital.....	.....	R. H. Guthrie.....	7,640	7,640	.....	201	10	0	0	7/1 & 10/1	1	\$167
Cook County Hospital *1.....	Chicago.....	F. J. Gerty.....	6,571	6,571	.....	10	6	0	0	1/1 & 7/1	1-3	\$25
Michael Reese Hospital *1,5.....	Chicago.....	R. R. Grinker.....	490	232	4,059	7	2	0	0	7/1	2	\$30
Research and Educational Hospital *.....	Chicago.....	A. A. Low.....	137	137	.....	1	3	0	4	7/1	1-3	\$50
University of Chile.....	.....	D. Sligh.....	214	.....	3,439	1	1	0	0	7/1	1-3	None
Elgin State Hospital.....	.....	E. Liebert.....	6,586	6,586	664	177	3	0	0	Varies	1	\$33
Central State Hos.....	.....	M. A. Bahr.....	2,670	2,670	.....	30	4	0	0	Varies	1+	\$157
Indianapolis City.....	.....	L. Carter.....	701	.....	1,833	12	1	0	0	7/1	1-3	\$42
Logansport State Hospital *1,12.....	.....	C. L. Williams.....	2,284	2,284	.....	38	4	0	0	7/1	2-3	\$150
Iowa State Psychopathic Hospit.....	.....	A. H. Woods.....	328	309	1,335	0	3	2	1	7/1	1	\$64
Menninger Sanitarium.....	.....	W. C. Menninger and H. Crank.....	154	.....	254	1	4	0	0	1/1 & 7/1	1	\$120
U. S. Public Health Service.....	.....	W. A. Preston.....	1,026	1,026	.....	12	6	0	0	.....	1-2	\$150
Johns Hopkins Hospital *1.....	.....	J. C. Whitehorn.....	313	257	4,800	0	1	3	0	7/1 & 9/1	1-6	None
Spring Grove State Hospital.....	.....	S. W. Weltmer.....	2,550	2,550	781	72	3	0	0	1/1 & 7/1	1+	\$100
Springfield State Hospital *1.....	.....	K. B. Jones.....	3,456	3,456	3,192	57	4	0	0	7/1	1+	\$123
Sheppard and Enoch Pratt.....	.....	R. McC. Chapman.....	708	708	.....	7	7	0	0	1/1 & 7/1	1-3	\$100
McLean Hospital *1.....	.....	K. J. Tillotson.....	403	403	.....	4	0	0	1	Varies	1-2	\$75
Boston Psychopathic Hospital *1.....	Boston.....	C. M. Campbell.....	2,171	2,171	7,932	4	8	0	0	9/1	1+	\$75
Boston State Hospital *1.....	Boston.....	H. F. Norton.....	1,165	1,165	543	150	6	0	0	Varies	1+	None
Massachusetts General Hospital *1,2.....	Boston.....	S. Cobb.....	89	.....	.....	1	1	1	0	1/1 & 7/1	1-2	\$42
Foxboro State Hospital.....	Foxboro, Mass.....	G. B. Pearson.....	1,428	1,428	500	44	1	0	0	Varies	1	\$45
Gardner State Hospital *1.....	Gardner, Mass.....	F. W. Moore.....	1,747	1,513	95	33	8	0	0	Varies	1+	\$150
Danvers State Hospital *1.....	.....	L. Maletz.....	3,440	3,440	2,208	122	2	0	0	Varies	1	\$45
Medford State Hospital.....	.....	E. K. Holt.....	2,216	2,216	198	19	1	0	0	Varies	1-2	\$150
Northampton State Hos.....	.....	G. C. Randall.....	2,741	2,741	903	61	1	0	0	Varies	1+	\$150
Grafton State Hospital *1.....	North Grafton, Mass.....	H. L. Paine.....	1,766	1,766	1,948	30	2	0	0	Varies	1	None
Taunton State Hospital *1.....	Taunton, Mass.....	R. M. Chambers.....	2,359	2,359	2,068	89	5	0	0	7/1	1-2	\$150
Westboro State Hospital *1.....	Westboro, Mass.....	W. E. Lang.....	2,439	2,439	990	63	3	0	0	Varies	1-2	\$150
Worcester State Hospital *1.....	Worcester, Mass.....	W. Malamud.....	3,196	3,196	428	137	10	0	0	1/1 & 7/1	1	None
University Hospital *1.....	Ann Arbor, Mich.....	R. W. Wagoner.....	339	.....	2,967	2	1	2	0	7/1	1-3	\$25
City of Detroit Receiving Hospital *1,10.....	Detroit.....	.....	5,722	5,722	1,076	88	1	2	0	7/1	1+	\$75
Henry Ford Hospital *.....	Detroit.....	T. J. Heldt.....	780	.....	6,838	16	1	0	0	9/1	1-3	\$120
Eloise Hospital and Infirmary *.....	Eloise, Mich.....	M. H. Hoffmann.....	4,119	.....	.....	63	7	0	0	7/1	2	\$100
Pontiac State Hospital.....	Pontiac, Mich.....	P. V. Wagley.....	.....	.....	77	2	2	0	0	Varies	3	\$200
Traverse City State Hospital *1.....	Traverse City, Mich.....	R. P. Sheets.....	3,000	3,000	823	59	2	0	0	Varies	3	\$200
Ypsilanti State Hospital *1.....	Ypsilanti, Mich.....	O. R. Yoder.....	3,410	3,410	200	54	2	0	0	Varies	1-3	\$165
Minneapolis General Hospital *1,12.....	Minneapolis.....	J. C. Michael.....	1,361	1,361	5,186	54	0	0	1	7/1	1-3	\$25
University Hospitals *1,12.....	Minneapolis.....	J. C. McKinley.....	637	.....	3,885	23	0	0	2	7/1	3	\$50
Mayo Foundation.....	Rochester, Minn.....	(See page 788)										
St. Peter State Hospital *1.....	St. Peter, Minn.....	G. H. Freeman.....	2,799	2,799	.....	48	1	0	0	Varies	1-2	\$75
State Hospital No. 1.....	Fulton, Mo.....	R. Hanks.....	3,016	3,016	52	59	3	0	0	7/1	1-3	\$100
State Hospital No. 2.....	St. Joseph, Mo.....	F. A. Carmichael.....	3,459	3,459	100	65	4	0	0	Varies	1+	\$75
City Sanitarium.....	St. Louis.....	L. H. Kohler.....	3,777	3,777	.....	80	2	8	0	7/1	1	\$75
St. Louis City Hospital *.....	St. Louis.....	J. Whitehorn.....	1,447	1,447	1,426	28	1	2	0	7/1	1-3	\$75
Hastings State Hospital.....	Ingleside, Neb.....	J. C. Nielsen.....	1,738	1,534	698	45	0	3	0	Varies	1-2	\$125
Norfolk State Hospital.....	Norfolk, Neb.....	G. E. Charlton.....	1,227	1,227	151	36	4	0	0	Varies	1+	\$140
Bishop Clarkson Memorial Hospital *.....	Omaha.....	A. E. Bennett.....	321	.....	331	5	1	0	0	7/1	1	\$50
New Hampshire State Hospital.....	Concord.....	C. H. Dolloff.....	2,834	2,834	740	48	1	0	0	Varies	1+	\$75
New Jersey State Hospital *1.....	Greystone Park.....	M. A. Curry.....	7,433	7,433	2,646	88	11	0	0	Varies	1+	\$169
New Jersey State II.....	.....	J. B. Gordon.....	3,183	3,183	903	134	1	0	0	7/1	1	\$50
Albany Hospital *1,2.....	.....	D. E. Cameron.....	758	457	1,993	26	1	1	0	7/1	1	\$25
Binghamton State.....	.....	W. C. Garvin.....	2,763	2,763	1,324	58	3	0	0	Varies	1+	\$150
Buffalo State Hospital *1.....	Buffalo.....	C. Fletcher.....	3,173	3,173	1,961	35	3	0	0	Varies	1+	\$159
Edward J. Meyer Memorial Hospital *1,12.....	Buffalo.....	E. A. Sharp and S. A. Hartwell.....	1,534	1,531	3,703	43	1	0	0	7/1	3-4	\$30
Central Islip State Hospital *1.....	Central Islip, N. Y.....	D. Coreoran.....	9,453	9,453	3,273	184	10	0	0	1/1 & 7/1	1-3	\$150
Hastings Hillside Hospital.....	Hastings-on-Hudson, N. Y.....	L. Wender.....	127	127	1,446	0	1	0	0	7/1	1	\$100
Gowanda State Homeopathic Hospital.....	Helmuth, N. Y.....	E. V. Gray.....	3,208	3,208	.....	99	6	0	0	Varies	1+	\$150
Kings Park State Hospital *1.....	Kings Park, N. Y.....	J. H. Shuffleton.....	6,015	6,015	.....	117	9	0	0	Varies	1+	\$150
Marey State Hospital.....	Marey, N. Y.....	W. W. Wright.....	3,165	3,165	277	59	2	0	0	Varies	1+	\$150
Middletown State Hor.....	.....	W. A. Schmitz.....	3,728	3,728	1,232	92	4	0	0	Varies	1+	\$150
Bellevue Hospital *1.....	.....	K. Bowman.....	30,215	30,215	11,333	317	0	0	5	1/1 & 7/1	1-2	\$50
New York Hospital *.....	.....	O. Diethelm.....	346	.....	6,485	2	2	7	0	7/1	1-5	\$50
New York State Psychiatric Institute and Hospital *1.....	New York City.....	N. D. C. Lewis.....	295	295	1,724	1	8	0	0	1/1 & 7/1	1-2	\$25
U. S. Marine.....	New York City.....	S. D. Vestermark.....	869	.....	91	6	2	0	0	7/1	1	\$150
St. Lawrence.....	Oranburg, N. Y.....	J. A. Pritchard.....	2,622	2,622	765	68	6	0	0	Varies	1+	\$150
Rockland State Hospital *1.....	Orangeburg, N. Y.....	R. E. Blaisdell.....	2,672	2,672	3,720	187	3	0	0	7/1	1-2	\$150
Hudson River State Hospital *1.....	Poughkeepsie, N. Y.....	R. P. Folsom.....	5,073	5,073	8,477	105	2	0	0	Varies	1+	\$150
Croton State Hospital.....	Queens Village, N. Y.....	G. W. Mills.....	5,501	5,501	3,977	144	2	0	0	Varies	2	\$150
Rochester State Hospital.....	Rochester, N. Y.....	J. L. Van De Mark.....	3,712	3,712	.....	88	2	0	0	Varies	1+	\$150
Strong Memorial and Rochester Municipal Hospitals *.....	Rochester, N. Y.....	R. C. A. Janike.....	477	357	1,174	1	1	0	0	7/1	1	\$125
Utica State Hospital *1.....	Utica, N. Y.....	W. E. Merrihan.....	2,245	2,245	1,577	23	2	0	0	7/1	1+	\$125
Grasslands Hospital *.....	Valhalla, N. Y.....	T. P. Brennan.....	1,112	1,112	765	25	2	3	0	1/1 & 7/1	1-3	\$118
New York Hospital—Westchester Division.....	White Plains, N. Y.....	C. O. Cheney.....	671	671	.....	5	2	4	0	1/1 & 7/1	1-3	\$125

23. PSYCHIATRY—(Continued)

	Chief of Service	Inpatients Treated	Service or House Cases	Outpatient Visits	Autopsies	Residents	Assistant Residents	Fellowships	Service Begins	Length of Service (Years)	Beginning Stipend
Duke Hospital * ¹	Durham, N C	R S Lyman	47	27	352	0	1	0	7/1	13	None
Cincinnati General Hospital * ¹	Cincinnati	E A North	1,094	1,094	13	2	0	0	7/1	12	None
Longview State Hospital	Cincinnati	E A Baber	3,241	2,773	1,053	71	2	0	Varies	14	\$75
City Hospital *	Cleveland	L J Karnosh	743	743	2,431	18	1	2	7/1	13	\$10
Columbus State Hospital * ¹	Columbus, O	J E Bateman	3,400	3,400	952	65	1	1	7/1	12	\$30
Toledo State Hospital	Toledo, O	O O Fordyce	3,480	3,480	1,790	52	1	0	7/1	12	\$100
Harding Sanitarium	Worthington O	G T Harding	305	305	1	1	0	0	1/1	1	\$100
Oregon State Hospital	Salem	B I Williams	3,545	300	100	100	2	0	10/1	1	\$100
Danville State Hospital	Danville, Pa	L R Chamberlain	2,483	2,483	2,816	22	1	0	Varies	1	\$100
Harrisburg State Hospital * ¹	Harrisburg, Pa	H K Petry	2,500	2,500	2,6	39	3	0	9/1	14	\$125
Norristown State Hospital	Norristown, Pa	A P Noyes	4,175	4,175	766	110	8	0	Varies	14	\$125
Friends Hospital * ¹	Philadelphia	T L Dehne	248	248	5	3	0	0	7/1	12	\$100
Institute of the Pennsylvania Hospital * ¹	Philadelphia	L H Smith	316	2,710	0	0	0	4	7/1	1	Varies
Pennsylvania Hospital Department for Mental and Nervous Diseases * ¹	Philadelphia	L H Smith	475	475	2,179	8	0	0	1/1&7/1	1	Varies
Philadelphia General Hospital * ¹	Philadelphia	O S English	6,082	6,082	15,070	1	0	0	7/1&8/1	12	\$100
Temple University Hospital	Philadelphia	G J Wright and H L Mitchell	2,990	2,906	497	27	1	1	9/1	12	\$65
St Francis Hospital *	Pittsburgh	C P Fitzpatrick	2,937	2,406	342	63	6	0	7/1	12	\$125
Warren State Hospital * ¹	Warren Pa	A H Ruggles	3	1	93	5	3	0	1/1&7/1	1	\$80
State Hospital for Mental Diseases * ¹	Howard, R I	J J McCaffrey	69	100	21	1	0	0	1/1	1	\$15
Butler Hospital * ¹	Providence, R I	L R Brown	440	440	1	1	1	0	7/1	13	\$100
Charles V Chapin Hospital	Providence, R I	T H Harris	916	2,456	20	1	1	0	7/1	13	\$75
Galveston State Psychopathic Hospital * ¹	Galveston, Tex	D C Wilson	438	1,284	9	1	1	0	7/1	1	\$10
John Sealy Hospital * ¹	Galveston Tex	W N Keller	3,068	3,068	158	2	0	0	7/1	13	\$10
University of Virginia Hospital * ¹	Charlottesville	C W Miller Jr	2	2,08	67	92	3	0	7/1	1	\$100
Western State Hospital * ¹	FT Stearns, Wash	J W Doughty	2	2,331	94	2	0	0	Varies	12	\$100
Eastern State Hospital * ¹	Medical Lake Wash	W T Lorenz	1,052	1,052	118	36	1	1	7/1	1	\$75
Northern State Hospital	Sedro Wooley, Wash	M Krasik	1,599	1,599	1,225	21	5	0	1/1&7/1	1	\$90
State of Wisconsin General Hospital * ¹	Madison	L H Ziegler	207	2	3	2	0	0	7/1	13	\$30
Milwaukee County Hospital for Mental Diseases	Wauwatosa, Wis										
Milwaukee Sanitarium * ¹	Wauwatosa, Wis										

24. RADIOLOGY

Revision of list is now taking place in collaboration with the American Board of Radiology

	Chief of Service	Röntgenographic Examinations	Ray Treatments	Radium Treatments	Autopsy Percentage	Residents	Assistant Residents	Fellowships	Service Begins	Length of Service (Years)	Beginning Salary
Los Angeles County Hospital * ¹	Los Angeles	R A Carter	146,898	12,749	1,072	57	3	0	7/1	1	\$75
St Vincent's Hospital *	Los Angeles	K S Davis	6,182	1,483	0	40	0	0			
San Francisco Hospital * ¹	San Francisco	L Bryan and L H Garland	57,894	4,710	5	76	4	0	7/1	12	\$75
Stanford University Hospitals * ¹	San Francisco	R R Newell	12,646	7,091	257	53	1	1	7/1	12	\$75
University of California Hospital * ¹	San Francisco	R S Stone	10,903	9,511	438	67	1	3	7/1	14	\$125
Colorado General Hospital * ¹	Denver	E A Schmidt	6,126	2,173	24	83	1	0	8/1	12	\$10
Hartford Hospital *	Hartford, Conn	D J Roberts	11,178	6,093	84	57	1	0	1/1&7/1	23	\$75
New Haven Hospital * ¹	New Haven, Conn	L Wilson	19,064	19,064	59	59	1	2	7/1	14	\$75
Girfield Memorial Hospital *	Washington, D C	F A Merritt	8,080	5,902	59	59	1	0	7/1	13	\$80
Georgetown University Hospital *	Washington, D C	F O Coe	5,902	2,690	47	44	0	2	7/1	13	\$80
Sibley Memorial Hospital *	Washington, D C	J F Edward	2,882	03	39	43	2	0	7/1	13	\$10
Veterans Administration Facility	Washington, D C	W P Hynes	8,276	1,848	8	32	1	0	Varies	14	
Walter Reed General Hospital *	Washington, D C	W L Thompson	22,573	5,288	319	82	1	0	Varies	24	
Grady Hospital *	Atlanta, Ga	P I Kim	22,252	918	38	1	0	1	7/1	1	\$75
Piedmont Hospital *	Atlanta, Ga	G R Hrdicka	2,572	1,130	22	43	1	0	7/1	1	\$75
Cook County Hospital * ¹	Chicago	M J Hubeny	91,300	32,085	20	4	0	2	1/1&7/1	13	\$80
Michael Reese Hospital *	Chicago	R A Arens	21,450	6,177	60	0	0	2	7/1	1	\$100
Passavant Memorial Hospital * ¹	Chicago	J T Cise	3,118	1,788	70	0	0	1	1/1&7/1	2	\$100
Presbyterian Hospital *	Chicago	F H Squire	19,428	4,986	61	64	2	0	Varies	13	\$80
Provident Hospital *	Chicago	B W Anthony	4,523	1,289	40	47	1	0	7/1	13	\$80
Research and Educational Hospital *	Chicago	A Hartung	9,214	9,000	67	87	2	0	7/1	13	\$80
St Luke's Hospital *	Chicago	E L Jenkinson	27,000	5,214	42	71	0	2	7/1	13	\$80
University of Chicago Clinics *	Chicago	P C Hodges	17,955	7,862	70	78	1	3	7/1	13	\$80
Evanston Hospital *	Evanston, Ill	E R Crowder	14,443	773	79	2	0	0	7/1	1	\$80
Veterans Administration Facility	Evanston, Ill	A F Williams	49,840	20,402	3,461	42	3	0	1/1	13	\$80
Indiana University Medical Center * ¹	Indianapolis	R E Deeler	12,407	6,939	400	52	0	0	7/1	13	\$80
Methodist Hospital *	Indianapolis	H Oehsner	10,599	4,232	21	2	0	0	7/1	12	\$80
University Hospitals * ¹	Iowa City	H D Kerr	26,077	19,057	141	55	1	2	7/1	14	\$80
University of Kansas Hospitals *	Kansas City, Kan	G M Tice	20,611	1,46	157	68	1	0	7/1	12	\$80
Charity Hospital * ¹	New Orleans	L Menville	67,71	28,311	276	47	2	2	7/1	13	\$100
Southern Baptist Hospital *	New Orleans	L W Magruder	8,977	6,457	28	1	0	0	10/1	24	\$80
Touro Infirmary *	New Orleans	M D Teitelbaum	31,088	71	71	1	0	0	7/1	1	None
Johns Hopkins Hospital *	Baltimore	J W Pierson	1,244	5,506	173	77	1	1	7/1&9/1	1	None
University Hospital *	Boston	H J Walton	20,617	6,461	324	56	1	1	7/1	1	None
Beth Israel Hospital *	Boston	S A Robins	12,407	2,971	19	48	1	0	11/1	1	\$80
Boston City Hospital * ¹	Boston	P F Butler	66,777	6,572	43	47	1	0	Varies	14	\$80
Children's Hospital	Boston	G M Wyatt	14,647	608	63	1	0	0	7/1	1	\$100
Isaiah Clinic	Boston	H F Hare	70,000	6,000	50	0	0	1	7/1	1	\$100
Massachusetts	Boston	G W Holmes	31,349	4,732	34	63	1	2	7/1	1	\$100
Massachusetts	Boston	G Eveyne	8,74	216	73	76	1	0	7/1	21	None
New England	Boston	J H Marks	6,727	5,638	239	48	1	0	7/1	1	\$100
Peter Bent Brigham Hospital *	Boston	M C Sostmann	16,475	5,648	212	61	1	1	7/1	14	\$100
University Hospital * ¹	Ann Arbor, Mich	F T Hodges	27,850	942	157	68	0	3	7/1	1	\$100
City of Detroit Receiving Hospital * ¹	Detroit	I C Kenning	70,584	17	79	1	1	0	Varies	1	Varies
Grace Hospital *	Detroit	R H Stevens	11,566	5,220	14	79	1	1	7/1	1	\$100
Harper Hospital *	Detroit	I Reynolds	25,777	2,276	252	57	1	1	7/1	1	\$100
Henry Ford Hospital *	Detroit	M W Clift	27,551	7,177	240	74	0	2	7/1	1	\$100
Hurley Hospital *	Detroit	L G Rucker	31,597	10,497	700	79	0	0	7/1	1	\$100
University Hospital * ¹	Detroit	C F Varden	4,999	2,157	73	74	1	0	7/1	1	\$100
St Joseph Hospital *	St Louis	S Moore	17,810	1,116	119	61	1	1	7/1	1	\$100
Barnes Hospital *	St Louis	I W Spinzig	17,779	2,865	48	9	1	0	7/1	1	\$100
Boomer G Phillips Hospital * ¹	St Louis	I R Sante	22,733	2,070	195	48	1	1	7/1	1	\$100
St Louis City Hospital *	St Louis	O C Zink	2,423	721	87	44	1	0	7/1	1	\$100
St Luke's Hospital *	St Louis	J F Kelly	2,046	2,745	24	1	0	0	7/1	1	\$100
Crichton Memorial St Joseph's Hospital *	Omaha										

24. RADIOLOGY—(Continued)

		Chief of Service	Roentgenographic Examinations	X-Ray Treatments	Radium Treatments	Autopsy Percentage	Residents	Assistant Residents	Fellowships	Service Begins	Length of Service (Years)	Beginning Salary
University of Nebraska Hospital *	Omaha	H. Hunt	4,741	2,968	121	86	2	0	0	7/1	1-3	\$50
Mary Hitchcock Memorial Hospital *	Hanover, N. H.	L. K. Sycamore	7,549	932	35	78	1	0	0	7/1	1	\$42
Brooklyn Hospital *	Brooklyn	J. Pepe	10,267	2,281	.....	44	1	0	0	1/1&7/1	1-2	\$50
Jewish Hospital *	Brooklyn	M. G. Wasch	18,608	4,206	32	47	1	1	0	1/1&7/1	1½	\$25
Kings County Hospital *	Brooklyn	R. Rendich and A. B. Friedman	68,791	23,834	200	23	2	1	0	7/1	1-2	\$18
Long Island College Hospital *	Brooklyn	A. L. L. Bell	12,791	3,607	98	38	1	2	0	7/1	3	None
Methodist Hospital *	Brooklyn	G. Cramp	6,072	1,506	74	44	1	0	0	7/1	1	None
Edward J. Meyer Memorial Hospital *	Buffalo	C. R. Orr	12,403	3,330	9	33	0	2	0	7/1	3-4	\$50
Queens General Hospital *	Jamaica, N. Y.	I. S. Startz	23,475	7,782	168	67	2	0	0	7/1	1	\$18
New Rochelle Hospital *	New Rochelle, N. Y.	J. F. Miller	10,576	2,936	.....	41	1	0	0	7/1	1-2	\$50
Bellevue Hospital *	New York City	L. Friedman	105,998	10,990	1,719	33	1	0	0	1/1&7/1	1	\$83
Beth Israel Hospital *	New York City	I. S. Hirsch	8,200	2,295	110	33	3	0	0	1/1	1-2	\$15
Bronx Hospital *	New York City	W. Snow and J. Fried	4,763	1,913	13	41	1	0	0	7/1	1-2	\$50
Flower and Fifth Avenue Hospitals *	New York City	J. C. Howard	5,807	1,732	14	26	2	0	0	7/1	1	None
Lenox Hill Hospital *	New York City	F. Huber	13,580	2,582	80	58	1	0	0	7/1	1-2	\$50
Montefiore Hosp. for Chronic Diseases *	New York City	M. Lenz and A. Bendiek	7,078	6,991	74	71	3	0	0	1/1&7/1	1	\$50
Morrisania City Hospital *	New York City	S. Weitzner	23,629	7,832	80	31	1	0	0	1/1	1	\$18
Mount Sinai Hospital *	New York City	M. L. Sussman	24,189	10,654	38	48	2	2	0	1/1&7/1	2	\$30
New York City Hospital *	New York City	E. Kraft	10,792	.....	.....	42	1	0	0	7/1	1	\$100
New York Hospital *	New York City	J. R. Carly	36,573	7,877	40	64	1	2	0	7/1	1-3	\$50
New York Polytechnic Medical School and Hospital *	New York City	E. E. Smith	6,021	3,057	33	23	1	0	0	7/1	2	None
New York Post-Graduate Medical School and Hospital *	New York City	W. M. Meyer	9,708	2,897	618	37	1	2	0	1/1&7/1	1½	\$30
New York University College of Medicine Clinic *	New York City	I. S. Hirsch	.....	.....	.....	0	0	1	0	10/1	1	None
Presbyterian Hospital *	New York City	R. Golden	36,156	18,189	217	49	1	2	0	9/1	3	\$12
Roosevelt Hospital *	New York City	W. H. Boone	14,038	1,861	76	45	1	0	0	7/1	1-2	\$25
St. Luke's Hospital *	New York City	E. J. Ryan	20,987	5,127	211	51	1	1	0	1/1	2-3	\$50
Welfare Hospital for Chronic Diseases *	New York City	H. K. Taylor	12,255	.....	.....	47	1	0	0	7/1	1	\$100
Strong Memorial and Rochester Municipal Hospitals *	Rochester, N. Y.	S. L. Warren	19,519	6,245	511	73	1	2	7	7/1	1-4	.....
Sea View Hospital *	Staten Island, N. Y.	A. V. Shapiro	25,663	.....	.....	29	1	0	0	7/1	1	\$100
Grasslands Hospital *	Yonkers, N. Y.	A. G. Debbie	11,651	7,416	26	64	1	0	0	7/1	1	\$118
Duke Hospital *	Durham, N. C.	R. J. Reeves	26,069	10,090	399	60	1	3	0	7/1	1-4	None
Watts Hospital *	Durham, N. C.	W. W. Vugghan	6,798	2,380	108	40	1	0	0	7/1	1	\$25
City Hospital *	Akron, Ohio	F. T. Moore	10,827	5,716	66	36	2	0	0	7/1	3	\$85
Cincinnati General Hospital *	Cincinnati	S. Lange	21,757	8,669	471	51	1	3	0	7/1	1-3	.....
Jewish Hospital *	Cincinnati	S. Brown	5,588	1,430	64	30	1	0	0	7/1	1-3	\$45
City Hospital *	Cleveland	H. T. Karsner	21,472	7,896	.....	44	1	2	0	7/1	1-3	\$10
Cleveland Clinic Foundation Hospital *	Cleveland	R. H. Nichols	17,302	4,000	2,000	51	0	0	3	7/1	1-3	\$55
St. Luke's Hospital *	Cleveland	R. J. May	15,456	2,965	59	43	1	0	0	6/25	3	\$25
St. Vincent Charity Hospital *	Cleveland	J. R. Andrews	5,569	933	37	36	1	0	0	7/1	1	\$50
University Hospital *	Cleveland	E. Freedman	24,843	5,435	192	66	1	0	0	7/1	2	\$50
University Hospitals *	Oklahoma City	J. E. Heatley	18,319	9,090	295	56	1	0	0	7/1	1	\$50
St. Vincent's Hospital *	Portland, Ore.	S. E. Rees	5,039	388	.....	50	1	0	0	8/1	3	\$50
University of Oregon Medical School Hospitals and Clinics *	Portland, Ore.	D. L. Palmer	14,403	1,459	.....	58	1	2	0	7/1	3	\$10
Ablington Memorial Hospital *	Ablington, Pa.	J. D. Zuleck	11,720	2,385	.....	56	1	0	0	7/1	1-2	\$10
Bryn Mawr Hospital *	Bryn Mawr, Pa.	R. S. Bromer	7,006	2,888	156	41	1	0	0	11/1	5	\$50
Graduate Hospital of the University of Pennsylvania *	Philadelphia	A. Finkelstein	10,690	1,884	50	50	0	0	2	7/1	2	\$62
Hospital of the Protestant Episcopal Church *	Philadelphia	R. P. Barden	7,791	2,059	.....	78	1	0	0	8/1	1	\$50
Hospital c	Philadelphia	E. P. Pendergrass	14,411	7,252	30	56	2	0	4	10/1	1-3	None
Jefferson	Philadelphia	K. Kornblum	18,017	11,927	1,109	41	3	0	1	9/1	1	\$50
Mount Sin	Philadelphia	G. Rosenbaum and L. E. Rosen	10,062	834	63	50	1	0	0	7/15	2-3	\$25
Pennsylvania Hospital *	Philadelphia	P. A. Bishop	10,431	2,167	103	69	1	0	0	7/1	1-3	\$20
Philadelphia General Hospital *	Philadelphia	B. P. Whelan	19,491	16,839	.....	60	1	0	0	7/1&8/1	1-2	\$100
Presbyterian Hos	Philadelphia	J. H. Vastine	16,345	2,913	81	82	1	0	1	6/1&7/1	1-2	\$50
Temple University	Philadelphia	W. E. Chamberlain	14,207	3,913	226	69	3	0	0	9/1	3	\$10
Mercy Hospital *	Philadelphia	H. N. Mawhinney	11,127	2,873	224	37	1	0	0	9/1	1	None
Robert Packer Hospital *	Sayre, Pa.	S. P. Perry	6,790	800	23	54	0	0	1	9/1	3	\$50
Roper Hospital *	Charleston, S. C.	B. Kalayjian	6,181	3,062	27	43	1	0	0	7/1	1-3	\$25
John Gaston Hospital *	Memphis, Tenn.	W. D. Anderson	15,549	5,929	48	25	1	1	0	7/1	3	\$33
Methodist Hospital *	Memphis, Tenn.	S. W. Coley	3,080	2,280	25	33	1	0	0	7/1	1	\$50
Vanderbilt University Hospital *	Nashville, Tenn.	C. C. McClure	10,570	3,143	.....	62	1	0	0	7/1	1+	\$75
Baylor University Hospital *	Dallas, Tex.	A. E. Seeds	2,524	1,020	31	0	1	0	0	7/1	1-2	\$50
Parkland Hospital *	Dallas, Tex.	J. R. Maxfield, Jr.	14,571	3,774	49	31	1	0	0	7/1	1-3	\$25
John Sealy Hospital *	Galveston, Tex.	J. B. Johnson	13,138	2,061	6	65	0	1	1	7/1	1	\$50
Mary Fletcher Hospital *	Burlington, Vt.	A. B. Soule, Jr.	3,378	3,887	37	37	1	0	0	7/1	1	\$50
University of Virginia Hospital *	Charlottesville	V. W. Archer	14,892	4,248	146	40	1	1	0	7/1	1	\$50
Medical College of Virginia, Hospital Div.	Richmond	F. B. Mandeville	10,865	3,141	108	37	0	1	0	7/1	1	\$50
State of Wisconsin General Hospital *	Madison	E. A. Pohle	31,125	9,926	312	75	1	2	0	7/1	3	\$25
Columbia Hospital *	Milwaukee	S. A. Morton	2,898	2,917	90	48	1	0	0	7/1	3	\$25

25. SURGERY

		Chief of Service	Inpatient Treatments	Service or House Calls	Outpatient Visits	Autopsies	Residents	Assistant Residents	Fellowships	Service Begins	Length of Service (Years)	Beginning Stipend
Hillman Hospital *	Birmingham, Ala.	D. S. Moore	1,810	1,810	13,063	50	2	0	0	7/1	1	\$50
Norwood Hospital *	Birmingham, Ala.	C. N. Carraway and D. F. Talley	1,923	1,923	5,222	15	2	0	0	7/1	3	\$100
Employees' Hospital of the Tennessee Coal, Iron and Railroad Company *	Fairfield, Ala.	L. Noland	1,156	1,156	16,839	13	1	0	0	7/1	1	\$159
Baptist State Hospital *	Little Rock, Ark.	R. M. Eubanks	2,319	236	.....	11	1	0	0	7/1	1	\$100
General Hospital of Fresno County *	Fresno, Calif.	C. M. Vanderburgh	4,068	4,068	24,024	62	1	2	0	7/1	3	\$65
Cedars of Lebanon Hospital *	Los Angeles	L. Felger and M. H. Rabwin	2,176	1,019	4,563	31	1	0	0	7/1	1	\$75
Los Angeles County Hospital *	Los Angeles	G. Thomason	4,437	4,437	29,158	111	7	0	0	1/1&7/1	3½	\$10
White Memorial Hospital *	Los Angeles	G. Thomason	1,200	.....	12,282	10	2	0	0	7/1	2	\$50

25. SURGERY—(Continued)

		Chief of Service	Inpatients Treated ^a	Service or House Calls	Outpatient Visits	Autopsies	Residents	Assistant Residents	Fellowships	Service Begins	Length of Service (Years)	Beginning Stipend
Highland-Alameda County Hospital* ¹		Oakland, Calif..... D. N. Richards and W. E. Mitchell	1,681	1,681	.....	48	1	1	0	7/1	1-3	\$10
San Bernardino County Charity Hospital*		San Bernardino, Calif. C. G. Hilliard	950	950	4,979	40	1	0	0	7/1	1	\$100
San Diego County General Hospital*		San Diego, Calif..... C. M. Fox	2,366	2,366	4,918	69	2	0	0	7/1	1	\$115
Hospital for Children* ²		San Francisco..... A. Kilgore	1,043	136	2,510	2	0	1	0	7/1	1	\$25
Mary's Help Hospital*		San Francisco..... E. Carlson	708	37	5,258	5	1	0	0	7/1	1	\$75
Mount Zion Hospital*		San Francisco..... H. Brunn	1,448	424	5,482	26	1	2	0	6/16	1	\$50
St. Luke's Hospital*		San Francisco..... A. Weeks	4,176	4,176	3,113	23	1	2	0	7/1	1	\$100
San Francisco Hospital* ¹		San Francisco..... H. Brunn and L. Eloesser	3,843	3,843	.....	10	0	0	0	7/1	1	\$50
Stanford University Hospitals* ¹		San Francisco..... E. Holman	1,863	800	15,263	32	1	5	0	7/1	1-2	\$25
University of California Hospital* ¹		San Francisco..... H. C. Naffziger	1,363	774	14,831	28	1	5	0	9/1	1+	\$25
Santa Clara County Hospital*		San Jose, Calif..... H. Dahleen	3,345	3,345	21,402	14	1	0	0	7/1	1-5	\$250
Colorado General Hospital* ^{1,3}		Denver..... C. F. Hegner	813	613	5,490	51	1	1	0	8/1	2	\$10
St. Luke's Hospital*		Denver..... H. S. Finney	3,683	.....	.....	34	2	0	0	7/1	2	\$50
Grace Hospital*		New Haven, Conn..... R. Nichols	1,740	470	1,359	16	1	1	0	7/1	3	\$10
New Haven Hospital*		New Haven, Conn..... S. C. Harvey	4,726	.....	21,098	91	2	6	0	1/1&7/1	1+	\$50
Memorial Hospital*		Wilmington, Del..... J. G. Spackman	1,658	.....	2,627	35	1	2	0	9/1	3	\$50
Central Dispensary and Emergency Hosp.*		Washington, D. C..... J. F. Mitchell	2,208	.....	1,641	27	1	3	0	6/15	1-3	\$50
Freedmen's Hospital*		Washington, D. C..... E. L. Howes	1,979	1,060	27,309	27	1	4	0	7/1&10/1	1-2	\$10
Gallinger Municipal Hospital*		Washington, D. C..... C. S. White	1,602	1,602	8,632	38	1	2	0	7/1	1	\$25
Gurfield Memorial Hospital*		Washington, D. C..... H. H. Kerr	4,560	1,220	2,000	58	1	1	0	7/1	1-3	\$50
Georgetown University Hospital*		Washington, D. C..... J. A. Cahill	1,760	410	2,498	20	1	3	7/1	3	\$75	
Providence Hospital*		Washington, D. C..... J. A. Cahill	3,108	1,136	15,009	28	1	2	0	7/1	3	\$25
Sibley Memorial Hospital*		Washington, D. C..... P. S. Putzki	1,923	.....	.....	12	1	0	0	7/1	2	\$75
Durvil County Hospital*		Jacksonville, Fla..... E. Jelks	925	.....	.....	21	1	2	0	7/1	1	\$30
James M. Jackson Memorial Hospital*		Miami, Fla.....	2,730	.....	20,170	41	1	2	0	7/1	1	\$75
Grady Hospital*		Atlanta, Ga.....	3,511	.....	47,267	69	2	4	2	7/1	1+	\$30
St. Joseph's Infirmary* ¹		Atlanta, Ga..... G. P. Hingley	1,013	430	1,062	15	1	0	0	7/1	1-3	\$25
University Hospital* ¹		Augusta, Ga..... J. H. Sherman	2,633	.....	5,638	50	1	4	0	7/1	1-4	\$35
Emory University Hospital*		Emory University, Ga..... D. C. Elkin	1,094	351	.....	18	1	1	0	7/1	1-2	\$50
Augustana Hospital*		Chicago..... N. M. Percy	1,068	383	.....	17	1	0	0	1/1	1	Noe
Cook County Hospital* ¹		Chicago..... M. Davison	14,754	14,754	46,377	148	12	0	0	1/1&7/1	3	\$25
Grant Hospital*		Chicago.....	2,842	237	5,554	15	2	0	0	7/1	1-3	\$50
Mercy Hospital-Loyola University Clinics*		Chicago..... M. P. McGuire	1,066	277	5,449	12	1	0	0	7/1	1-3	\$50
Michael Reese Hospital* ¹		Chicago..... S. Strauss	3,262	691	655	39	2	0	0	1/1&7/1	1-2	\$50
Mount Sinai Hospital* ¹		Chicago.....	1,502	298	6,116	12	1	0	0	7/1	1	\$30
Norwegian-American Hospital*		Chicago..... J. V. Fowler, Sr.	979	21	.....	5	1	0	0	7/1	1	\$35
Passavant Memorial Hospital* ¹		Chicago..... L. Davis	1,794	127	7,432	33	3	0	1	1/1&7/1	1+	Noe
Presbyterian Hospital*		Chicago..... V. C. David	2,242	81	.....	26	2	0	0	Varies	1-3	\$50
Provident Hospital*		Chicago..... C. G. Roberts	1,058	.....	18,821	17	1	0	1	7/1	1-5	\$70
Research and Educational Hospital*		Chicago..... W. H. Cole	1,009	1,009	.....	32	3	0	0	7/1	1-3	\$50
St. Joseph Hospital*		Chicago..... H. McKenna	931	226	227	6	1	0	0	7/1	1	\$50
St. Luke's Hospital*		Chicago..... J. D. Ellis	3,227	484	5,719	33	1	2	0	7/1	1-3	\$25
University of Chicago Clinics*		Chicago..... D. B. Phemister	1,802	1,802	20,105	56	1	3	6	1/1&7/1	1-10	\$25
Wesley Memorial Hospital*		Chicago..... R. W. McNealy	2,092	.....	.....	26	3	0	0	7/1	1-2	\$25
Evanston Hospital*		Evanston, Ill..... F. Christopher	1,441	.....	6,296	42	1	0	0	7/1	1	\$50
Indianapolis City Hospital*		Indianapolis..... M. H. Hadley	1,486	1,486	14,631	35	2	0	0	7/1	1-2	\$12
Indiana University Medical Center* ¹		Indianapolis..... W. D. Gateh	1,918	.....	6,444	35	2	2	1	7/1	1-3	\$63
Methodist Hospital*		Indianapolis..... H. S. Leonard	7,380	.....	.....	65	2	0	0	7/1	1-2	\$15
University Hospitals* ¹		Iowa City..... P. R. Peterson	2,667	2,534	4,800	71	1	7	0	7/1	1-6	\$21
University of Kansas Hospitals*		Kansas City, Kan..... T. G. Orr	735	.....	3,452	32	1	4	0	7/1	1-4	\$50
St. Joseph Hospital*		Lexington, Ky..... F. W. Rankin and W. O. Bullock	1,543	403	.....	38	1	2	0	7/1	1-3	\$30
Louisville City Hospital*		Louisville, Ky..... R. A. Griswold	2,026	2,026	22,513	85	1	16	0	7/1	1-5	\$11
St. Joseph Infirmary*		Louisville, Ky..... I. Abell, Sr.	6,897	200	.....	23	1	1	0	7/1	1-2	\$15
Charity Hospital* ¹		New Orleans.....	12,060	12,060	59,738	164	7	6	0	7/1	1-4	\$25
Touro Infirmary*		New Orleans..... J. D. Rives	3,049	.....	12,974	48	3	0	0	7/1	1-2	\$25
Baltimore City Hospitals*		Baltimore..... T. B. Aycock	3,822	3,822	.....	150	1	5	0	7/1	1	\$12
Bon Secours Hospital*		Baltimore..... G. A. Stewart	1,692	755	630	11	1	2	0	7/1	1	\$25
Church Home and Infirmary* ¹		Baltimore..... T. S. Cullen	2,204	584	1,637	32	1	3	0	7/1	2-4	\$30
Franklin Square Hospital*		Baltimore..... E. S. Johnson	793	474	1,974	15	1	1	0	7/1	1	\$15
Hospital for Women*		Baltimore..... W. Riehoff	641	588	3,643	3	1	2	0	7/1	1	\$20
Johns Hopkins Hospital*		Baltimore..... A. Blalock	2,175	1,637	45,911	56	1	6	0	7/1	1-8	Noe
Maryland General Hospital*		Baltimore.....	3,243	461	3,782	20	1	5	0	7/1	1-4	\$30
Mercy Hospital*		Baltimore..... W. D. Wise	2,297	.....	5,342	31	1	4	0	9/1	3	\$25
Provident Hospital and Free Dispensary*		Baltimore..... G. C. Finney	641	571	1,023	12	2	1	0	10/5	1-4	\$25
St. Agnes Hospital		Baltimore.....	1,405	629	2,917	6	1	4	0	7/1&10/1	1-3	Noe
St. Joseph's Hospital*		Baltimore..... W. R. Geraghty	1,768	.....	6,176	12	1	4	0	7/1	3-4	\$10
Sinai Hospital*		Baltimore..... A. Ullman	1,345	453	5,347	8	1	5	0	7/1	1	\$20
South Baltimore General Hospital*		Baltimore..... C. W. Maxson	1,545	.....	7,030	17	1	2	0	7/1	1-4	\$10
Union Memorial Hospital*		Baltimore..... J. M. T. Finney, Jr.	3,344	.....	8,180	44	1	5	0	7/1	1-4	Noe
University Hospital*		Baltimore..... A. M. Shipley	2,756	.....	12,269	33	1	4	0	7/1	1-4	Noe
West Baltimore General Hospital*		Baltimore..... N. C. Marvel	849	285	4,565	13	3	0	0	7/1	3	\$25
Beverly Hospital*		Beverly, Mass..... P. P. Johnson	1,904	859	932	32	1	0	0	9/1	2	\$70
Beth Israel Hospital*		Boston..... C. G. Mixer	2,760	929	5,674	40	1	2	0	1/1	1	\$70
Boston City Hospital* ¹		Boston..... I. J. Walker	13,628	13,628	75,656	102	5	2	0	Varies	1+	\$5
Children's Hospital		Boston..... W. E. Ladd	1,726	1,423	12,212	32	2	1	0	1/1&7/1	1	\$5
Lahay Clinic		Boston..... F. H. Lahay	3,500	.....	.....	.....	0	0	7	Quart.	1-3	\$100
Massachusetts General Hospital* ¹		Boston..... E. E. Churchill and A. W. Allen	6,886	.....	30,670	38	2	2	0	1/1	1-3	\$12
Massachusetts Memorial Hospitals*		Boston..... H. M. Clute	3,878	.....	3,277	23	2	0	0	8/1	2	\$20
Peter Bent Brigham Hospital*		Boston..... E. C. Cutler	3,014	.....	33,851	61	1	5	1	3/1, 7/1, 11/1	1 1/2	\$12
Cambridge Hospital*		Cambridge, Mass..... H. P. Stevens	1,138	395	3,321	9	1	0	0	7/1	1-2	\$12
Truesdale Hospital		Fall River, Mass..... P. E. Truesdale	734	.....	.....	8	3	0	0	1/1&7/1	1-2	Noe
Memorial Hospital*		Worcester, Mass..... B. H. Alton	2,177	.....	2,353	27	1	0	0	8/1	1-2	\$10
Worcester City Hospital*		Worcester, Mass..... B. F. Andrews	2,361	.....	7,590	24	1	0	0	7/1	1-2	\$50
University Hospital* ¹		Ann Arbor, Mich..... F. Collier	2,070	.....	8,541	68	6	13	0	7/1	1-3	\$25
Alexander Blain Hospital		Detroit..... A. W. Blain and I. G. Downer	869	.....	.....	14	2	0	0	7/1	1-3	\$75
City of Detroit Receiving Hospital* ^{1,10}		Detroit..... C. G. Johnston and C. F. Vale	4,873	4,873	40,245	80	2	2	2	7/1	1-3	\$75
Grace Hospital*		Detroit..... F. A. Kelly	4,013	1,392	3,263	63	1	2	0	7/1&9/1	3	\$70
Harper Hospital*		Detroit..... A. D. McAlpine	8,107	952	.....	.....	1	7	0	7/1	1-3	\$25
Henry Ford Hospital*		Detroit..... R. D. McChure	6,781	.....	99,280	59	1	23	1	9/1	1-5	\$120
Providence Hospital*		Detroit..... C. J. Jentgen	5,660	.....	.....	66	1	0	0	7/1	1	\$100
Eloise Hospital and Infirmary* ¹		Eloise, Mich..... W. J. Seymour	1,715	1,715	1,879	34	1	4	0	7/1	1-5	\$12
Hurley Hospital*		Flint, Mich..... A. H. Kretzmar	1,619	.....	.....	21	3	0	0	7/1	1	\$100
Ridgett Memorial Hospital*		Grand Rapids, Mich..... H. J. Vanden Berg	816	51	.....	13	1	0	0	7/1	1-2	\$100
Butterworth Hospital*		Grand Rapids, Mich..... G. H. Southwick	4,786	269	.....	48	1	1	0	7/1	1-3	\$100
St. Mary's Hospital*		Grand Rapids, Mich..... O. H. Gillett	2,897	.....	929	45	1	1	0	7/1	1-2	\$50

25. SURGERY—(Continued)

		Chief of Service	Inpatients Treated	Service or House Calls	Outpatient Visits	Autopsies	Residents	Assistant Residents	Fellow- ships	Service Begins	Length of Service (Years)	Beginning Salary
Minneapolis General Hospital *	Minneapolis	A. A. Zierold	2,099	2,099	14,105	50	0	0	6	1/1&7/1	3	\$25
University Hospitals *	Minneapolis	O. H. Wangersteen	1,413	.....	9,346	62	1	1	8	7/1	3	\$30
Mayo Foundation	Minneapolis	(See page 788)										
Ancker Hospital *	St. Paul	A. R. Colvin and D. G. Gardiner	1,626	1,626	5,292	95	3	0	0	7/1	3	\$30
St. Louis County Hospital *	Clayton, Mo.	L. A. Wm.	2,792	.....	42,729	55	1	3	0	7/1	1-2	\$50
Kansas City General Hospital *	Kansas City, Mo.	E. L. Miller	1,150	1,150	3,377	70	2	0	0	7/1	1-3	\$50
St. Mary's Hospital *	Kansas City, Mo.	M. J. Owens and J. R. MeVay	1,454	290	.....	47	1	0	0	7/1	1	\$50
Barnes Hospital *	St. Louis	E. A. Graham	1,461	.....	4,107	33	1	8	0	7/1	1-3	\$75
De Paul Hospital *	St. Louis	J. W. Thompson	1,705	.....	689	19	1	1	0	7/1	1-2	\$50
Homer G. Phillips Hospital *	St. Louis	R. Elman	2,514	.....	11,624	18	1	3	0	7/1	1-3	\$75
Jewish Hospital *	St. Louis	M. W. Myer	1,354	250	3,354	17	1	1	0	7/1	1+	\$35
Missouri Baptist Hospital *	St. Louis	.....	1,950	.....	.....	1	1	0	0	7/1	1	\$50
St. Louis City Hospital *	St. Louis	P. Heinbecker	1,953	1,953	10,514	173	3	7	0	7/1	1-3	\$50
St. Luke's Hospital *	St. Louis	E. V. Mastin	2,366	.....	4,501	43	0	1	0	7/1	1	\$50
St. Mary's Group of Hospitals *	St. Louis	L. Rassieur	2,465	1,608	11,287	52	0	0	6	7/1	3	\$25
Creighton Memorial St. Joseph's Hospital *	Omaha	Q. McMartin	1,183	306	373	11	.....	.....	.....	7/1	1-2	\$45
Cooper Hospital *	Camden, N. J.	P. M. Meurray and I. E. Deibert	1,635	.....	22,650	36	1	0	0	11/1	3	\$100
Jersey City Hospital *	Jersey City, N. J.	F. D. Seudder	4,207	3,155	24,097	36	1	3	0	10/1	2-3	\$100
Mountainside Hospital *	Montclair, N. J.	W. E. Lee	3,519	968	8,651	13	1	0	0	7/1	1+	\$100
Burlington County Hospital *	Mount Holly, N. J.	W. E. Lee	1,315	.....	2,836	32	1	0	0	7/1	2-3	\$100
Albany Hospital *	Albany, N. Y.	J. L. Donhauser	2,866	705	7,405	61	1	2	0	7/1	1	\$25
Coney Island Hospital *	Brooklyn	D. A. McAttee	2,333	2,333	39,288	41	1	1	0	8/1	1	\$100
Cumberland Hospital *	Brooklyn	M. N. Foote	4,821	4,821	46,104	24	1	0	0	7/1	1	\$18
Jewish Hospital *	Brooklyn	L. M. Davidoff	2,169	624	6,486	45	1	3	1	8/1	4	\$25
Kings County Hospital *	Brooklyn	J. Tenopyr and R. Barber	14,591	14,591	51,673	122	3	3	0	7/1	2	\$18
Long Island College Hospital *	Brooklyn	E. Goetsch	2,113	1,630	16,064	12	1	3	0	7/1	5-6	\$23
Norwegian Lutheran Deaconesses' Home and Hospital *	Brooklyn	.....	1,330	.....	18,747	.....	1	0	0	7/1	1	None
St. Mary's Hospital *	Brooklyn	W. Y. Pascual	1,321	655	4,823	15	1	0	0	7/1	1	\$40
Buffalo General Hospital *	Buffalo	.....	2,403	996	2,395	63	1	4	0	7/1	1-2	\$25
Deaconess Hospital *	Buffalo	.....	2,632	.....	862	38	1	0	0	7/1	1	\$100
Edward J. Meyer Memorial Hospital *	Buffalo	H. A. Smith	1,699	1,699	11,240	41	2	2	0	7/1	3-5	\$59*
Millard Fillmore Hospital *	Buffalo	A. H. Clark	2,026	207	676	27	1	1	0	7/1	1	\$25
Clifton Springs Sanitarium and Clinic	Clifton Springs, N. Y.	A. S. Taylor	716	716	.....	12	1	0	0	7/1	1-3	\$50
Mary Imogene Bassett Hospital *	Cooperstown, N. Y.	M. A. Melver	.....	.....	.....	.....	1	0	0	7/1	1	\$25
Meadowbrook Hospital *	Hempstead, N. Y.	C. A. Hetteshelmer and A. S. Warlner	2,163	2,163	.....	62	2	0	0	7/1	1	\$50
Mary Immaculate Hospital *	Jamaica, N. Y.	F. N. Dealy	1,860	.....	1,889	54	1	0	0	7/1	1	None
Queens General Hospital *	Jamaica, N. Y.	F. N. Dealy	4,052	4,032	18,606	154	1	1	0	7/1	1	\$18
Charles S. Wilson Memorial Hospital *	Johanson City, N. Y.	F. G. Moore	2,094	.....	.....	18	1	0	0	7/1	3	\$75
Bellevue Hospital *	New York City	H. A. Smith	10,775	10,775	64,069	159	2	0	0	1/1&7/1	1	\$83
Flower and Fifth Avenue Hospitals *	New York City	L. R. Knufman	2,446	533	6,041	10	2	4	0	7/1	1	\$25
Harlem Hospital *	New York City	L. Glazburg	3,491	5,491	33,953	16	1	1	0	1/1&7/1	1	\$18
Hospital for Special Surgery	New York City	C. G. Burdick	1,913	606	5,431	12	1	2	0	Quart.	1	\$20
Lenox Hill Hospital *	New York City	.....	1,836	7,457	44	2	0	0	0	1/1	2	\$10
Metropolitan Hospital *	New York City	J. H. Fobes	1,821	1,821	11,027	31	2	0	0	7/1	1+	\$100
Montefiore Hospital for Chronic Diseases *	New York City	S. Standard	110	34	.....	10	1	2	0	1/1&7/1	1	\$25
Mount Sinai Hospital *	New York City	.....	.....	24,951	.....	3	4	0	0	1/1&7/1	1-2	\$50
New York City Hospital *	New York City	L. W. Grossman	1,943	1,044	7,738	36	1	1	0	7/1	1	None
New York Hospital *	New York City	G. J. Heuer	4,567	4,567	43,003	59	3	16	0	7/1	1-6	\$25
New York Infirmary for Women and Children *	New York City	A. Hubert	1,012	645	11,020	1	1	0	0	7/1	1	\$15
New York Polytechnic Medical School and Hospital *	New York City	.....	1,617	.....	8,011	8	8	0	0	Quart.	2	None
New York Post-Graduate Medical School and Hospital *	New York City	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Presbyterian Hospital *	New York City	T. H. Russell	4,263	1,498	41,634	37	3	14	0	1/1&7/1	1-3	None
St. Luke's Hospital *	New York City	A. O. Whipple	3,569	2,081	59,476	50	2	10	0	1/1&7/1	1-4	None
Genesee Hospital *	Rochester, N. Y.	W. F. MacFee	3,136	2,000	17,162	50	2	8	0	7/1	5	\$25
Rochester General Hospital *	Rochester, N. Y.	C. Sumner	2,288	657	4,485	50	1	2	0	7/1	1	\$41
St. Mary's Hospital *	Rochester, N. Y.	W. Wooden	4,720	1,822	7,089	60	2	1	0	7/1	2	\$30
Strong Memorial and Rochester Municipal Hospitals *	Rochester, N. Y.	L. F. Simpson	1,930	772	3,486	10	1	0	0	7/1	1	\$125
Hospital of the Good Shepherd *	Syracuse, N. Y.	J. J. Morton	2,565	1,924	15,283	131	1	7	0	7/1	1-1	\$12
Grasslands Hospital *	Valhalla, N. Y.	A. G. Swift	2,991	1,073	3,438	37	1	2	0	7/1	1	\$42
Duke Hospital *	Durham, N. C.	G. C. Adie	647	647	3,438	47	1	2	0	7/1	1-3	\$75
Watts Hospital *	Durham, N. C.	D. Hart	1,825	1,551	10,267	25	1	8	10	7/1	1-7	None
Rutherford Hospital *	Rutherfordton, N. C.	F. Roberson	1,875	422	3,826	19	1	2	0	7/1	1	\$25
City Hospital *	Winston-Salem, N. C.	M. H. Biggs	947	947	5,790	4	1	0	0	7/1	1	\$20
Trinity Hospital *	Minot, N. D.	W. L. Grimes	3,639	1,178	4,999	32	2	2	0	7/1	2	\$30
City Hospital *	Akron, O.	A. L. Cameron	912	.....	.....	17	1	0	0	7/1	1-3	\$20
St. Thomas Hospital *	Akron, O.	.....	5,212	.....	2,052	68	4	1	0	7/1	3	\$25
Mercy Hospital *	Canton, O.	E. C. Banker	1,373	.....	59	18	1	0	0	7/1	1	\$20
Christ Hospital *	Cincinnati	A. W. Warren	3,143	292	.....	30	1	0	0	7/1	1	\$43
Cincinnati General Hospital *	Cincinnati	R. A. Shank	2,295	178	2,111	47	2	0	0	6/25	1	\$75
Deaconess Hospital *	Cincinnati	M. R. Reid	3,366	2,366	26,287	93	2	14	0	9/1	1-6	*
Good Samaritan Hospital *	Cincinnati	W. R. Gress	2,642	180	.....	17	1	0	0	7/1	1	\$75
Jewish Hospital *	Cincinnati	J. L. DeCourcy	7,632	2,579	889	42	1	2	1	7/1	1-4	\$25
City Hospital *	Cleveland	J. L. Ranshoff	2,579	241	.....	18	2	0	0	7/1	1-2	\$15
Cleveland Clinic Foundation Hospital	Cleveland	C. H. Lenhart	2,613	2,613	21,107	85	6	10	0	7/1	1-5	\$10
Mount Sinai Hospital *	Cleveland	G. W. Crile	2,490	.....	.....	44	0	0	0	7/1	1-3	\$25
St. Alexis Hospital *	Cleveland	A. Strauss	1,900	361	3,785	16	2	0	0	7/1	1	\$60
St. John's Hospital *	Cleveland	J. F. Corrigan	4,115	710	9,569	63	4	0	0	7/1	2	\$25
St. Luke's Hospital *	Cleveland	G. P. O'Malley	1,657	.....	.....	7	4	0	0	7/1	1-2	\$40
St. Vincent Charity Hospital *	Cleveland	D. M. Glover	2,443	931	2,720	31	2	1	0	7/1	3	\$20
University Hospitals *	Cleveland	O. A. Weber	4,744	.....	17,793	9	1	3	0	7/1	1-4	\$30
Starling-Lovari University Hospitals *	Columbus, O.	C. Lenhart	3,163	1,799	18,661	80	5	4	1	7/1	2	\$25
Miami Valley Hospital *	Dayton, O.	V. A. Dodd	1,724	.....	5,682	43	1	3	0	7/1	1-5	\$25
Huron Road Hospital *	East Cleveland, O.	H. Huston	3,477	601	.....	25	1	0	0	7/1	1+	\$75
Lucas County General Hospital *	Toledo, O.	H. L. Frost	2,192	87	2,185	25	1	1	1	7/1	1-3	\$20
St. Elizabeth's Hospital *	Youngstown, O.	F. J. McCormick	1,814	1,814	18,744	21	1	0	0	7/1	1	\$20
St. Anthony Hospital *	Oklahoma City	R. M. Ranx	1,985	.....	254	6	1	1	0	7/1	1-2	\$20
University Hospitals *	Oklahoma City	R. M. Howard	4,150	499	.....	17	1	1	0	7/1	1	\$20
University of Oregon Medical School Hospitals and Clinics *	Portland, Ore.	R. M. Howard	1,266	1,178	5,610	52	1	1	0	7/1	1	\$75
Ablacton Memorial Hospital *	Ablacton, Pa.	T. Joyce	1,541	1,541	11,128	59	1	2	0	7/1	2	\$10
		D. B. Pfeiffer	2,458	.....	4,393	46	1	1	0	7/1	2	\$15

25. SURGERY—(Continued)

		Chief of Service	Inpatients Treated	Service or House Cases	Outpatient Visits	Autopsies	Residents	Assistant Residents	Fellow- ships	Service Beginns	Length of Service (Years)	Beginning Stipend
St Luke's Hospital *	Bethlehem, Pa	W L Estes, Jr	2,128		804	16	1	0	0	7/1	2	\$50
George F Gelsinger Memorial Hospital *	Danville, Pa	H L Foss	2,063		12,162	32	1	0	0	7/1	12	\$50
Germantown Dispensary and Hospital *	Philadelphia		3,594	2,007	25,333	20	1	0	0	8/1	13	\$110
Graduate Hospital of the University of Pennsylvania *	Philadelphia	W E Lee and W Bates	1,253	1,253	19,006	29	2	0	0	7/1	2	None
Hahnemann Hospital *	Philadelphia	G A Van Lennep	2,650		12,255	32	0	2	0	9/1	2	\$50
Hospital of the University of Pennsylvania *	Philadelphia	F L Chnson	2,421		7,951	18	0	0	7	7/1	5	None
Jefferson Medical College Hospital *	Philadelphia	T A Shallow and G P Muller	3,920		22,495	103	2	0	2	9/1	1	\$50
Jewish Hospital *	Philadelphia	M Behrend	3,572		3,270	69	1	0	0	6/15	12	None
Pennsylvania Hospital *	Philadelphia	J B Thek and W I Lee	1,741	1,554	23,944	31	2	0	0	10/1&11/1	13	\$70
Philadelphia General Hospital *	Philadelphia	W W Bibcock	3,681	3,681	12,753	1	0	1	0	7/1&8/1	12	\$100
Temple University Hospital *	Philadelphia	1,747	1,747	1,886	37	3	0	0	0	9/1	3	\$10
Woman's Hospital *	Philadelphia	C M Smyth and H Sutley	791		3,328	0	1	0	0	7/1	3	\$75
Allegheny General Hospital *	Pittsburgh	O C Gaub	2,403	1,323	12,747	20	1	0	0	9/1	1	\$50
Children's Hospital *	Pittsburgh	L W Meredith and W O Sherman	521	471	1,843	4	0	1	0	9/1	1	\$30
Mersey Hospital *	Pittsburgh	J P Griffith	3,622		15	1	0	0	0	9/1	13	\$50
Montefiore Hospital *	Pittsburgh	C A Hill and H Frankenstein	1,333	347	7,024	20	1	0	0	9/1	13	\$50
St Francis Hospital *	Pittsburgh	2,736	2,643	2,676	18	1	1	0	0	9/1	12	\$65
Reading Hospital *	Reading, Pa	1,320	616	5,395	53	1	0	0	0	9/1	1	\$51
Robert Packer Hospital *	Sayre, Pa	D Guthrie	1,188	1,161	2,883	16	0	0	2	9/1	2	\$50
Roper Hospital *	Charleston S C	R S Cathcart	1,722	1,205	9,464	32	1	2	1	7/1	13	\$10
Baroness Erlanger Hospital *	Chattanooga Tenn	H Laws Jr	3,396	1,821	2,035	35	2	2	0	7/1	12	\$10
John Giston Hospital *	Memphis, Tenn	J L McGhee	2,554		12,968	23	1	1	0	7/1	1	\$33
George W Hubbard Hospital of McHarry Medical College *	Nashville, Tenn	J H Hale	703		6,934	12	1	0	0	7/1	2	\$75
Nashville General Hospital *	Nashville, Tenn	J A Bartley	1,459	1,421	17,390	27	1	2	0	7/1	12	\$30
Vanderbilt University Hospital *	Nashville, Tenn	B Brooks	2,465	1,585	20,782	55	1	6	0	7/1	1+	\$35
Baylor University Hospital *	Dallas, Tex	C B Carter	2,063	264	2,243	9	1	1	0	7/1	12	\$18
Parkland Hospital *	Dallas, Tex	L Hudson	2,817		2,872	56	4	0	0	1/1&7/1	2	\$75
John Sealy Hospital *	Galveston, Tex	A O Singleton	1,266		6,374	28	1	2	0	7/1	17	\$50
Southern Pacific Hospital	Houston, Tex	J L Taylor	847	837	3,300	12	1	0	0	7/1	12	\$100
University of Virginia Hospital *	Charlottesville	E P Lehman	1,706	1,706	7,337	36	1	5	0	7/1	1	\$53
Chesapeake and Ohio Hospital	Chifton Forge, Va	J M Emmett	2,093	200	11	2	0	0	0	Varies	2	\$50
Norfolk General Hospital *	Norfolk Va	1,656	1,761	31	1	0	0	0	0	7/1	12	\$50
Medical College of Virginia, Hospital Div *	Richmond	I A Bigger	2,396		12,020	47	2	5	0	7/1	1	\$50
Jefferson Hospital *	Roanoke, Va	H H Trout	1,530		3,832	34	1	1	0	7/1	1	\$50
King County Hospital *	Seattle	R J O Shea	2,258	2,258	29,840	73	1	0	0	7/1	1	\$125
Charleston General Hospital *	Charleston W Va	J T Cannady	2,076		1,324	16	1	3	0	7/1	13	\$50
Laird Memorial Hospital	Montgomery, W Va	W R L Bird	759		394	20	1	2	0	1/1	12	\$100
State of Wisconsin General Hospital *	Madison	F R Schmidt	2,957		2,651	55	2	6	0	7/1	3	\$25
Columbia Hospital *	Milwaukee	S J Seeger	527	19	293	14	1	0	0	7/1	4	\$50
Milwaukee Children's Hospital	Milwaukee	L I Anderson	2,000		12,122	6	1	0	0	7/1	1	\$50
St Joseph's Hospital *	Milwaukee	T A Stratton	5,304	2,745	2,659	32	1	0	0	6/15	12	\$10
St Mary's Hospital *	Milwaukee	W C F Witte	2,424		19	1	0	0	0	7/1	1	\$70
Milwaukee County Hospital *	Wauwatosa, Wis	J King	3,734	3,734	17,132	40	3	2	0	7/1&7/15	1	\$50

26 THORACIC SURGERY

Olive View Sanatorium	Olive View, Calif	J Skillen	283	283		3	0	0	0	Varies	1+	\$50
Norwich State Tuberculosis Sanatorium (Unes on Thames)	Norwich, Conn	R G Urquhart	393	393		6	1	0	0	7/1	2	\$175
City of Chicago Municipal Tuberculosis Sanatorium	Chicago	R M Davison	255	255		1	1	0	0	1/1	12	\$100
Sanat Division of the Boston City Hospital	Boston	H Binney	1,070	1,070		1	0	0	0	Varies	1+	\$150
University Hospital *	Ann Arbor, Mich	J Alexander	49		1,055	10	2	0	0	7/1	12	\$50
Barnes Hospital *	St Louis	F A Graham	260		19	0	0	1	0	7/1	1	\$100
Hudson County Tuberculosis Hospital	Jersey City, N J	F Bortone	224	224		0	1	1	0	7/1	14	\$100
Kings County Hospital *	Brooklyn	F J Grace	251	281	453	14	1	0	0	7/1	1	\$100
Edward J Meyer Memorial Hospital *	Buffalo	H A Smith	54	54		7	1	0	0	7/1	3	\$50
Marion M Biggs Memorial Hospital *	Ithaca N Y	E F Butler	465	463	5,125	5	0	0	1	Varies	11+	\$100
Mount Morris Tuberculosis Hospital	Mount Morris N Y	G F Butler	143	143		1	1	0	0	7/1	12	\$150
Bellevue Hospital *	New York City	F B Berry				4	0	0	0	1/1&7/1	12	\$100
Metropolitan Hospital *	New York City	S A Thompson	186		1,912	2	1	0	0	7/1	14	\$50
Homer Folks Tuberculosis Hospital	Oneonta N Y	J M Chamberlain	249		25	9	0	1	0	Varies	1+	\$100
Sea View Hospital *	Staten Island, N Y	L R Davidson	412		20	3	2	0	0	1/1&7/1	2	\$100
City Hospital *	Cleveland	C H Lenhart				1	0	0	0	7/1	1	\$50
University of Oregon Medical School Hospi- tals and Clinics *	Portland	R Mntson	157	157	2,984	11	1	2	0	7/1	3	\$10
Murdale Sanatorium	Wauwatosa, Wis	F Rame and J D Steele	282	282	48	6	1	0	0	Varies	12	\$175

27. TRAUMATIC SURGERY

Morrisania City Hospital *	New York City	G F Milani	2,549	2,549	14,325	28	1	1	0	1/1&7/1	1	\$15
Charleston General Hospital *	Charleston, W Va	H S Swart	1,064		392	7	1	0	0	7/1	13	\$50

28. TUBERCULOSIS

Los Angeles Sanatorium *	Duarte, Calif	J Rosenblint	127	123	150	14	2	0	0	Varies	1+	\$100
Arroyo Del Valle Sanatorium *	Livermore, Calif	C Bush	516	516	794	4	1	0	0	7/1	1	\$50
Barlow Sanatorium *	Los Angeles	H W Bosworth	171	171	1,759	1	1	0	0	7/1	1	\$50
Los Angeles County Hospital *	Los Angeles	C Howson	922	922	4,225	142	3	0	0	Varies	1+	\$50
Pottenger Sanatorium and Clinic *	Monrovia, Calif	F M Pottenger	240		2,475	4	1	0	0	7/1	2	\$50
Bret Harle Sanatorium	Murphys, Calif	P P Smart	401	85	106	0	2	0	0	7/1	2	\$100
Olive View Sanatorium *	Olive View, Calif	W G Winter	1,701	1,701	21	1	0	0	0	7/1	1	\$50
San Diego County General Hospital *	San Diego Calif	R S Schneiders	256	256	2,247	1	0	0	0	7/1	14	\$50
San Francisco Hospital *	San Francisco	S I Shipman	722	722		2	0	0	0	7/1	15	\$175
Santa Clara County Sanatorium	Santa Jose, Calif	C L Isaacs	704	704	5,999							
Fairmont Hospital of Alameda County *	San Leandro, Calif	P Samson and H G Trimble	514	519		40	1	0	0	7/1	1	\$50

28. TUBERCULOSIS—(Continued)

		Chief of Service	Inpatients Treated	Service or House Cases	Outpatient Visits	Autopsies	Residents	Assistant Residents	Fellow- ships	Service Begins	Length of Service (Years)	Beginning Stipend
Denver General Hospital *	Denver	C. L. Lincoln	113	113	5,839	15	1	0	0	7/1	1	\$50
National Jewish Hospital of the Jewish Consumptives	Denver	C. J. Kaufman	428	428	2,912	21	4	0	0	1/1&7/1	3	\$75
	Spivak, Colo.	A. Rest	368	368	1,295	13	5	0	0	Varies	3	\$100
	Norwich, Conn.	H. B. Campbell	632	632	3,293	20	1	0	0	Varies	1+	\$75
	Shelton, Conn.	E. J. Lynch	676	676	3,293	28	1	0	0	Varies	1+	\$75
	Wallingford, Conn.	D. R. Lyman	337	337	500	0	2	0	0	Varies	1+	\$100
	Washington, D. C.	D. L. Finneane	1,204	1,204	.....	97	1	0	0	7/1	1	\$50
	Chicago	R. G. Bloch	.....	.....	.....	1	1	1	1	1/1&7/1	1-2	None
	Decatur, Ill.	D. O. N. Lindberg	179	179	2,761	5	1	0	0	1/1	1-3	\$100
	Peoria, Ill.	M. Pollak	265	265	2,900	14	2	0	0	7/1	1	\$125
	Rockford, Ill.	W. J. Bryan	245	245	2,870	8	1	0	0	7/1	1-3	\$150
	Evansville, Ind.	F. D. Grinnin	490	490	1,544	47	1	1	0	Varies	1-2	\$135
Boehne Tuberculosis Hospital	Indianapolis	F. L. Jennings	419	419	1,035	14	1	0	0	7/1	1	\$100
Sunnyside Sanatorium	Okdale, Ia.	J. H. Beck	713	713	884	26	1	0	0	7/1	1-2	\$100
	Greenwood Mountain	L. Adams	319	319	315	8	1	0	0	Varies	2	\$34
	Baltimore	H. V. Langhittig	724	724	.....	75	1	0	0	7/1	1	\$12
	Boston	A. Foley	1,070	1,070	.....	47	4	4	0	Varies	1+	\$83
	North Wilmington,											
	Mass.	C. C. MacCorison	363	363	2,678	0	1	0	0	Varies	1	\$150
Rutland State Sanatorium	Rutland, Mass.	B. B. Emerson	501	501	1,379	16	1	0	0	6/30	1	\$150
Norfolk County Hospital	South Braintree,											
	Mass.	N. R. Pillsbury	318	318	1,900	19	2	0	0	Varies	1-2	\$150
Middlesex County Sanatorium	Waltham, Mass.	H. D. Chadwick	663	663	16,663	31	3	0	0	Varies	1	\$150
Belmont Hospital	Worcester, Mass.	R. Baker	259	259	3,803	20	2	0	0	Varies	1-3	\$133
University Hospital	Ann Arbor, Mich.	J. Barnwell	175	175	810	6	1	1	0	7/1	1	\$25
American Legion Hospital	Battle Creek, Mich.	W. L. Howard	337	337	.....	5	1	0	0	Varies	1+	\$123
Herman Klefer Hospital	Detroit	E. J. O'Brien and B.										
		H. Douglas	2,092	2,092	.....	102	7	0	0	7/1	1-3	\$150
Michigan State Sanatorium	Howell	G. L. Leslie	615	615	564	10	1	0	0	7/1&8/1	1	\$15
Ingham Sanatorium	Lansing, Mich.	C. J. Stringer	207	.....	3,071	14	1	1	0	7/1	1-2	\$100
Morgan Heights Sanatorium	Marquette, Mich.	R. F. Berry	183	183	597	9	1	0	0	8/1	1-2	\$150
William H. Maybury Sanatorium	Northville, Mich.	H. S. Willis	1,497	1,497	.....	70	0	0	0	Varies	2+	\$150
Oakland County Tuberculosis Hospital	Pontiac, Mich.	G. A. Sherman	461	10	3,895	14	2	0	0	7/1	1-4	\$150
Nopeming Sanatorium	Nopeming, Minn.	A. T. Lahrd	494	494	3,610	30	2	0	0	1/1	1-2	\$150
Glen Lake Sa-	Oak Terrace, Minn.	E. S. Mariette	1,099	1,099	6,798	74	1	0	0	Varies	1	\$10
Mississippi St.	Sanatorium	H. Roswell	630	630	1,575	12	2	0	0	7/1	2-3	\$100
Kansas City	Kansas City, Mo.	O. C. Heyer	296	296	.....	50	1	1	0	7/1	1-3	\$100
Robert Koch Hospital	Koeb, Mo.	G. D. Kettelkamp	970	970	.....	75	8	0	0	7/1	1+	\$100
Homer G. Phillips Hospital *	St. Louis	D. Myers	283	283	446	20	1	1	0	7/1	1-3	\$75
Mount St. Rose Sanatorium	St. Louis	R. A. Kinsella	203	211	.....	15	1	0	0	7/1	1	\$150
New Jersey Sanat. for Tuberculous Diseases	Glen Gardner	S. B. English	536	536	9,979	7	7	0	0	Varies	1+	\$100
Hudson County Tuberculosis Hospital	Jersey City, N. J.	B. S. Pollak	951	951	13,872	24	4	4	0	7/1	1+	\$100
Essex Mountain Sanatorium	Verona, N. J.	B. M. Harman	904	500	5,005	38	0	0	0	Varies	1+	\$200
Albany Hospital *	Albany, N. Y.	R. J. Erickson	197	197	1,556	32	1	0	0	7/1	1	\$100
Montefiore Hospital Country Sanatorium	Bedford Hills, N. Y.	M. Pinner	266	266	.....	0	3	0	0	1/1&7/1	1+	\$100
Kings County Hospital *	Brooklyn	C. Hamilton	1,163	1,163	9,262	40	3	0	0	7/1	1	\$100
Kingston Avenue Hospital	Brooklyn	F. Murray	192	192	1,720	1	1	1	0	1/1&7/1	1	\$18
Edward J. Meyer Memorial Hospital *	Buffalo	D. K. Miller	541	541	5,207	62	1	0	0	7/1	3	\$30
Hermann M. Biggs Memorial Hospital	Ithaca, N. Y.	J. K. Deegan	468	468	5,125	21	0	0	2	Varies	1	\$100
Mount Morris Tuberculosis Hospital	Mount Morris, N. Y.	N. S. Lincoln	272	282	5,147	16	3	0	0	7/1	1-2	\$100
Bellevue Hospital *	New York City	J. B. Amberson, Jr.	3,006	3,006	20,573	96	8	5	0	1/1&7/1	1	\$70
Lenox Hill Hospital *	New York City	G. Thorburn	.....	168	3,581	.....	1	0	0	7/1	1-2	\$50
Metropolitan Hospital *	New York City	G. G. Ornstein	497	497	2,187	40	1	6	0	7/1	1+	\$100
Montefiore Hospital for Chronic Diseases *	New York City	M. Pinner	500	500	1,506	77	1	2	0	1/1&7/1	1	\$25
Riverside Hospital	New York City	M. Tashman	806	806	.....	39	7	0	0	1/1	1	\$109
Homer Folks Tuberculosis Hospital	Onconeta, N. Y.	R. Horton	502	502	5,100	17	2	1	0	7/1	1+	\$159
Municipal Sanatorium	Ottisville, N. Y.	J. P. Dvoretzky	959	959	.....	1	7	0	0	1/1&7/1	1-2	\$129
Tola-Monroe County Tuberculosis Sanat.	Rochester, N. Y.	E. Bridge	696	696	15,429	49	6	0	0	7/1	1-2	\$100
Sea View Hospital *	Statens Island, N. Y.	G. G. Ornstein	3,482	3,482	.....	112	18	1	0	1/1&7/1	1+	\$100
Trudeau Sanatorium	Trudeau, N. Y.	F. H. Helse	347	347	.....	2	3	0	0	Varies	1+	None
Grasslands Hospital *	Valhalla, N. Y.	W. G. Childress	542	.....	4,482	43	3	3	0	1/1&7/1	1-3	\$118
Jefferson County Sanatorium	Watertown, N. Y.	S. E. Simpson	117	117	1,897	13	1	0	0	7/1	1-3	\$100
North Dakota State Tuberculosis Sanat.	San Haven, N. D.	C. Northrop	709	709	410	24	1	0	0	10/1	1 1/2	\$75
Hamilton County Tuberculosis Sanat.	Cincinnati		1,147	1,147	.....	80	9	0	0	7/1	1+	\$150
City Hospital *	Cleveland	J. C. Flack	1,255	1,255	3,398	31	2	0	0	7/1	1	\$90
Franklin County Sanatorium	Columbus, O.	D. D. Miller	679	679	.....	4	0	0	0	7/1	1-3	\$125
Sunny Acres, Cleveland Tuberculosis Sanat.	Wurmsville, O.	R. B. Browning	790	790	5,038	7	3	0	0	7/1	1+	\$163
Eagleville Sanatorium for Consumptives	Eagleville, Pa.	A. J. Cohen	266	266	7,194	2	2	0	0	Varies	1+	\$125
Germantown Dispensary and Hospital *	Philadelphia	E. M. McPherson	166	166	3,885	.....	.....	.....	.....	8/1	1-3	\$125
White Haven Sanatorium	White Haven, Pa.	F. A. Craik	514	514	.....	29	4	0	0	Varies	1+	\$125
State Sanatorium	Walham Lake, R. I.	U. E. Zambarrano	916	916	5,092	28	11	0	0	Varies	1+	\$150
Pine Breeze Sanatorium	Chattanooga, Tenn.	J. L. Hamilton	551	551	102	12	1	0	0	7/1	1-2	\$150
Davidson County Tuberculosis Hospital	Nashville, Tenn.	R. R. Crowe	641	641	3,486	28	2	0	0	7/1	2	\$150
Woodmen of the World War Memorial Hospital	San Antonio, Tex.	C. J. Koerth	260	260	.....	5	2	0	0	Varies	1	Varies
King County Tuberculosis Hospital	Seattle	H. B. Kellogg	256	256	3,045	21	1	0	0	7/1	1-3	\$100
Hopemont Sanatorium	Hopemont, W. Va.	A. V. Cadden	876	876	1,050	32	7	0	0	7/1	1+	\$165
Wisconsin State Sanatorium	Staten	H. M. Coon	327	.....	.....	9	3	0	0	Varies	1+	\$290
Mulndale Sanatorium	Wauwatosa, Wis.	A. L. Banyan	1,095	1,095	2,984	18	2	0	0	Varies	1-2	\$75

29. UROLOGY

Revision of list is now taking place in collaboration with the American Board of Urology

Hillman Hospital *	Birmingham, Ala.	W. F. Scott	477	.....	51,743	8	1	0	0	7/1	1	\$50
Los Angeles County Hospital *	Los Angeles	J. Negley	2,358	.....	14,529	76	6	0	0	4/1&19/1	3	\$10
White Memorial Hospital *	Los Angeles	H. C. Bumpus, Jr.	530	.....	9,455	12	1	0	0	7/1	1-3	\$50
San Francisco Hospital *	San Francisco	C. M. Johnson and J.										
		R. Dillon	850	850	.....	1	0	1	0	7/1	1	\$50
Stanford University Hospitals *	San Francisco	J. R. Dillon	412	146	13,647	3	1	0	0	7/1	2	\$25
University of California Hospital *	San Francisco	H. C. Naffziger	468	176	14,417	9	1	0	0	7/1	1+	\$25
New Haven Hospital *	New Haven, Conn.	C. Deming	.....	.....	3,400	6	1	0	0	7/1	1+	*
Gallinger Municipal Hospital *	Washington, D. C.	W. P. Herbst	697	697	.....	30	1	2	0	7/1	1	\$25
Grady Hospital *	Atlanta, Ga.	M. K. Bailey and E.										
		Floyd	659	.....	13,518	19	2	2	0	7/1	1+	\$20
Michael Reese Hospital *	Chicago	H. Rohlek	697	161	234	14	1	0	0	1/1	1-2	\$70
Presbyterian Hospital *	Chicago	H. Kretschmer	994	12	.....	11	1	0	0	7/1	1 1/2	\$50
University of Chicago Clinics *	Chicago	C. B. Huggins	.....	.....	4,870	9	0	2	0	7/1	1-2	None

29. UROLOGY—(Continued)

		Chief of Service	Inpatients Treated ^a	Service or House Cases	Outpatient Visits	Autopsies	Residents	Assistant Residents	Fellow ships	Service Begins	Length of Service (Years)	Beginning Stipend
Indianapolis City Hospital*	Indianapolis	R L Smith	572		6,659	19	1	0	0	7/1	12	\$12
University Hospitals*	Iowa City	N G Alcock	1,330	1,264	1,926	30	1	0	0	7/1	16	\$21
Charity Hospital*	New Orleans	P J Kahle and J G Pratt	3,458	3,458	28,517	60	5	3	0	7/1	13	\$25
Touro Infirmary*	New Orleans	W A Reed	496		6,269	16	1	0	0	7/1	1	\$75
Johns Hopkins Hospital*	Baltimore	H H Young	960	362	7,534	30	1	2	0	7/1	14	None
Beth Israel Hospital*	Boston	E G Crabtree	304	154	3,434	1	0	0	0	7/1	23	None
Boston City Hospital*	Boston	H H Howard	599	599	32,720	11	1	1	0	Varies	14	None
Lahay Clinic	Boston	E E Ewert	400		6,000	0	0	1	1	7/1	13	
Massachusetts General Hospital*	Boston	G G Smith	680		18,479	14	1	0	0	Quart	2	\$12
Massachusetts Memorial Hospitals*	Boston	S N Vose			3,505	3	1	0	0	7/1	13	\$100*
University Hospital*	Ann Arbor, Mich	R M Nesbit	1,201		7,982	25	1	0	0	7/1	15	\$75
City of Detroit Receiving Hospital*	Detroit	M L Martin and W E Keane	972	972	5,638	40	1	1	0	7/1	2	\$75*
Harper Hospital*	Detroit	F H Cole	510		2,149	3	0	1	0	7/1	13	\$25
Henry Ford Hospital*	Detroit	J K Ormond	466		11,314	4	1	1	0	9/1	3	\$130*
Floiso Hospital and Infirmary*	Eloise, Mich	W L Sherman	455	455		44	1	1	0	7/1	12	\$50
University Hospital*	Minneapolis	C D Crevier	572		4,049	20	0	0	1	7/1	3	\$50
Mayo Foundation	Rochester, Minn	(See below)										
Ancker Hospital*	St Paul	E B Foley	402		2,896	29	1	0	0	7/1	1	\$50
Kansas City General Hospital*	Kansas City, Mo	R L Hoffman	465	465	1,836	23	1	0	0	7/1	12	\$50
St Louis City Hospital*	St Louis	G Carroll	637	637	3,076	25	1	0	0	7/1	1	\$100
St Mary's Group of Hospitals*	St Louis	C E Burford	546	247	4,135	10	0	0	1	7/1	3	\$25
Atlantic City Hospital*	Atlantic City, N J	C H deT Shivers	122		2,330	1	0	0	0	7/1	1	None
Bayonne Hospital and Dispensary	Bayonne, N J	S R Woodruff	515	479	743	1	1	0	0	1/1&7/1	1	None
Jersey City Hospital*	Jersey City, N J		647	587	4,700	3	1	1	0	1/1&7/1	1	\$50
Newark City Hospital*	Newark, N J	C R O'Crowley	686	686		1	0	0	0	7/1	1	\$20
Albany Hospital*	Albany, N Y	J E Heslin	645	172	2,194	10	1	0	0	7/1	1	\$75
Kings County Hospital*	Brooklyn	C S Cochran	2,184	2,184	4,860	24	1	1	0	7/1	2	\$18
Long Island College Hospital*	Brooklyn	F J Senger	472	297	5,522	3	1	1	0	7/1	2	\$25
Buffalo General Hospital*	Buffalo	P J Parmenter	695	291	2,814	15	1	0	0	7/1	12	\$75
Edward J. Meyer Memorial Hospital*	Buffalo	F J Parmenter	327	327	2,949	10	0	1	0	7/1	3	\$50*
Queens General Hospital*	Jamaica, N Y	T G Riley	921	921	23,765	31	1	1	0	7/1	1	\$18
Bellevue Hospital*	New York City	H S Jeck	1,524	1,524	16,246	18	1	0	0	1/1&7/1	1	\$85
Morrisania City Hospital*	New York City	T Townsend	762	762	4,408	18	1	3	0	1/1&7/1	2	\$18
New York City Hospital*	New York City	J H Morrissey	336	336	1,851	9	1	0	0	7/1	12	\$100
New York Hospital*	New York City	A Stevens and O Lowsley	410	410	17,592	7	2	2	0	7/1	13	\$75
New York Post Graduate Medical School and Hospital*	New York City	I A Hyams	482	268	10,621	4	1	1	0	1/1&7/1	2	\$80
Presbyterian Hospital*	New York City	G T Chull	1,180	684	11,300	1	5	0	0	1/1&7/1	3	\$21
Roosevelt Hospital*	New York City	S A Belsler	364	299	6,569	9	1	0	0	7/1	12	None
St Luke's Hospital*	New York City	H G Bugbee	393	210	4,205	6	1	0	0	7/1	2	\$75
Strong Memorial and Rochester Municipal Hospitals*	Rochester, N Y	W W Scott	727	545	7,603	0	1	0	0	7/1	4	\$12
Sea View Hospital*	Staten Island, N Y	A J Greenberger	374	374		4	1	1	0	7/1	1+	\$100
Duke Hospital*	Durham, N C	F P Aylea	688	511	5,187	8	1	1	1	7/1	13	None
Watts Hospital*	Durham, N C	W M Coppridge	343		457	5	1	0	0	7/1	1	\$50
City Hospital*	Cleveland	C H Lenhart	341	341	6,193	24	1	0	0	7/1	1	\$50
Cleveland Clinic Foundation Hospital*	Cleveland	W E Lower	699		11,949	7	0	0	4	7/1	13	\$55
University Hospitals*	Cleveland	J J Jocelson	707	400	11,048	4	1	0	0	7/1	2	\$75
Stirling Loving University Hospital*	Columbus, O	W N Taylor	400		3,826	16	1	1	0	7/1	12	\$75
University of Oregon Medical School Hospitals and Clinics*	Portland	J G Strohm	449	449	8,044	11	1	2	0	7/1	3	\$10
Graduate Hospital of the University of Pennsylvania*	Philadelphia	J C Birdsall and W Macklinney	234	274	11,048	1	1	0	0	7/1	1	None
Hosp of the University of Pennsylvania*	Philadelphia	A Randall	468		4,200	0	1	0	0	0/1	2	None
Pennsylvania Hospital*	Philadelphia	L Herman	447	318	6,558	10	2	0	0	7/1&0/1	13	\$70
Presbyterian Hospital*	Philadelphia	J C Birdsall		249	17,018	13	1	0	0	7/1	1+	None
Mercy Hospital*	Pittsburgh	E J McQuagie	502			30	1	0	1	9/1	1	\$200
Parkland Hospital*	Dallas, Tex	A I Polson	367		4,323	14	1	0	0	7/1	1	\$25
University of Virginia Hospital*	Charlottesville	S A Vest	424	424	3,615	3	1	1	0	7/1	1	\$25
State of Wisconsin General Hospital*	Madison	I R Sisk	635	2,000		21	1	1	0	7/1	2	\$25
Milwaukee County Hospital*	Wauwatosa, Wis	R S Irwin	549		13,932	12	2	0	0	7/1&7/15	1+	\$50

Mayo Foundation Fellowships—The Mayo Foundation for Medical Education and Research, Rochester, Minnesota. D C Balfour, director. Three year fellowships beginning quarterly, leading to the degree of M.S. or Ph.D. with field named from the University of Minnesota. In Anesthesia, Dermatology and Syphilology, Internal Medicine, Neurology and Psychiatry, Neurosurgery, Obstetrics and Gynecology, Ophthalmology, Orthopedic Surgery, Otolaryngology, Pathology, Pediatrics, Physical Medicine, Plastic Surgery, Proctology, Radiology, Surgery, Urology. Stipend \$900 per year. (clinical fellowships including pathology and radiology—268)

- a Compensation arranged by medical school and hospital
b Represents number of patients
c In lieu of maintenance
d Outpatient and home delivery service only
e Hospital facilities by affiliation
f Resident selected and paid by Otto S A Sprague Memorial Institute
g Room maintenance only
h Includes ophthalmologic patients
i Includes otolaryngologic patients
j Includes two fellowships in gastroenterology
k Salary for fellows only. Maintenance provided residents
l Additional teaching material in outside clinic
m Residencies open to women
n Residencies for women only
o Inpatients. Numbers refer to total inpatients treated in specialty
Obstetrical admissions do not include newborns. In pathology and anesthesiology total hospital admissions are used
4 Residency includes only dermatology
5 Includes neurology and neurosurgery
6 Chicago Lying in Hospital and Dispensary, Chicago
7 Hospital service confined to drug addicts
8 Palmer Memorial Unit
9
10
11
12 Includes neurology
13 Hospital appoints residents from its own house staff
14 Includes orthopedics

- 15 Includes obstetrics
16 Applications will be considered only from men who have had a previous year's training in some recognized pathological laboratory
17 Apply to chief of service for information about affiliating hospitals
18 Includes proctology
19 Admissions confined to children
20 Separate appointments approved in roentgenology and radium therapy
21 Includes Bradford Memorial Hospital for Babies, the Children's Hospital of Texas, and Freeman Memorial Children's Clinic, Dallas
22 Includes thoracic surgery
23 Private and semi-private pavilions
24 Includes dermatology
25 Dental as well as medical degree required
26 Affiliated with South Bend Medical Laboratory, St Joseph Hospital, South Bend, Fikhart General Hospital, Elkhart, and St Joseph's Hospital, Mishawaka
27 One resident serves six months on obstetrics
28 Includes x-ray and radium therapy
29 Affiliated with Free Hospital for Women, Brookline, Mass
30 Affiliated with Bishop De Goebland Hospital, Burlington, and Fanny Allen Hospital, Winoski
31 Hospital admits tuberculous patients only
32 Approved by the Board as offering satisfactory two year training
33 Approved by the Board as offering satisfactory three year training
34 Data as reported for 1939
35 Additional surgical material furnished at Worcester Hatheway Hospital

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SATURDAY, AUGUST 30, 1941

CERTIFICATION OF SPECIALISTS

Within little more than a generation the amazing expansion of the medical sciences has made specialization in medical practice inevitable. The medical profession itself has assumed responsibility for adequate training of specialists. Moreover, it has recognized the need for establishing mechanisms by which the public may be able to distinguish those who are competent from those who are merely "self anointed." Fifteen examining boards are now functioning, representing as many fields of medicine. These boards examine candidates and issue certificates to those who are found qualified in their respective branches. Before examination the boards require a substantial period of preparation.

Primarily, the process of certification exists in order that physicians, patients, hospitals and others may be able to identify the well trained and fully competent specialist. The conduct of these boards should never be such as to cause them to be regarded as a means of creating, for limited practitioners, a monopoly, or of protecting them from competition. Not only would certification in the specialties lose its significance if the public and the profession came to regard it merely as a measure designed to increase the influence and incomes of a small self-interested group, but the result would be inevitably the elimination of the present voluntary mechanism and the substitution therefor of some process under public control. Some of the examining boards demand that all candidates for examination limit their practice exclusively to the field in which they seek to be certified. Such exclusiveness adds nothing to the candidate's ability, which is the qualification about which the public is concerned; indeed, such limitation may interfere seriously with provision of competent medical services. A board should never adopt or enforce in practice peculiar requirements related to other qualifications than the ability and integrity of the physicians who submit voluntarily to examination.

Power is the most delicate of all the forces that man may employ; its misapplication in what is still an experimental stage in the development and functioning of the certifying boards may turn it upon them to their own harm.

CORONARY EMBOLISM

The common cause of coronary occlusion is thrombosis secondary to sclerosis of the coronary vessels. Embolism of the coronary arteries is rare. The first case of this type was described by Virchow in 1856. Saphir,¹ in an exhaustive review of the literature, collected 11 cases, to which he added 3 observations of his own. Garvin and Work² have encountered 3 cases of coronary embolism among 12,300 consecutive necropsies. Levy, Bruenn and Kurtz found 6 instances of embolism in a study of the records of 762 cases of coronary occlusion, Appelbaum and Nicolson 4 cases among 168, Kirschbaum 4 among 612 cases of severe disease of the coronary arteries. Coronary embolism, according to Hamman,³ was registered at the Johns Hopkins Hospital for the first time in a period of more than fifty years in 1931, and then ten times in the succeeding nine years. Hamman believes that the condition is not nearly as rare as it was supposed to be. He estimates that from 1 to 2 per cent of the cases of coronary occlusion are due to embolism and predicts that the percentage will rise as the interest and familiarity incite more thorough investigation.

The embolic occlusion, usually single, of a large branch of a coronary vessel with its sudden and dramatic sequence, rather than the largely asymptomatic, multiple occlusions of small coronary arteries, attracts the interest of the clinician. The embolus may consist of air, fat, bacterial vegetations from heart valves, particles loosened from atheromatous lesions or broken-up thrombi. The left coronary artery and especially its left descending branch is most commonly obstructed. The common sources of emboli are endocarditic vegetations and cardiac intramural thrombi. The most frequent source of emboli is bacterial endocarditis. In the cases collected by Hamman, 50 per cent belonged to this group. The next most frequent source is to be found in the mural thrombi that occur in heart disease. Hamman points out that mural thrombi are found post mortem in 34 per cent of adults dying with heart disease, and, according to Garvin, in 25 per cent of all cases of heart disease there are mural thrombi in the left side of the heart, a condition which can give rise to coronary embolism. Other sources of embolism are a thrombus or atheromatous material in a coronary artery, a thrombus covering an arteriosclerotic plaque at the root of the aorta, thrombi in

1. Saphir, Otto: Coronary Embolism, *Am Heart J* 8:312 (Feb) 1933

2. Garvin, Curtis F., and Work, John L. Coronary Embolism: Report of Three Cases, *Am Heart J* 18:747 (Dec) 1939

3. Hamman, Louis: Coronary Embolism, *Am Heart J* 21:491 (April) 1941.

the pulmonary veins, and thrombi in the peripheral veins giving rise to so-called paradoxical embolism.

Why the coronary arteries are so rarely the seat of coronary embolism has been variously explained by the difference of the calibers of the aorta and the coronary arteries, by the situation of the coronary vessels at the commencement of the aorta, the right angle at which they leave the aorta and the bulk and swiftness of the blood current at this portion, and by the fact that the larger part of coronary filling occurs in diastole. The clinical diagnosis of coronary embolism is difficult because death is usually dramatically sudden. Coronary embolism would be suggested, according to Hamman, if a patient with bacterial endocarditis was to die suddenly. Sudden death in bacterial endocarditis is usually due to coronary embolism or the rupture of a mycotic aneurysm into the pericardial cavity. However, gross cause for the sudden death may not be discovered even at necropsy. The instantaneous death so characteristic of embolism, and contrary to the not unusual observation of recovery from a complete occlusion of a branch of a coronary artery, is probably due to the fact that in the former the coronary arteries were normal, and a collateral circulation has not had time to develop. In the absence of a collateral circulation an embolus in a main branch of the coronary is apparently capable of shutting off enough of the nutrition of the heart to be responsible for the sudden death.

In contrast to the dramatic symptoms which follow occlusion of large coronary branches, the obstruction of small branches does not give rise to symptoms. Eventually symptoms of heart failure may supervene, but these are not distinctive of coronary disease. Multiple embolic occlusion of small coronary branches is observed most frequently in bacterial endocarditis and mural thrombi.

RUSH MEDICAL COLLEGE—A CENTURY OF MEDICAL EDUCATION

One hundred and four years ago in the great Northwest, medical education was like an uncharted sea. In that year the legislature of Illinois chartered a medical college. Although the village of Chicago had increased its population many times within a few years, there were no railroads, pavements, sewers or a modern public water system. The health problems were urgent. A group of eight lawyers, four business men, three physicians, and two clergymen,¹ influential in the community, then became the trustees in the act of incorporation of Rush Medical College. Dr. Daniel Brainard, the guiding spirit, had come from the East, ambitious and eager to see his profession advance. The first course of study at Rush was given in 1843 in Dr. Brainard's office on Clark near Randolph Street. In his opening address on medical education, Dr. Brainard discussed

a question that has since been answered: the creation of a national board of examiners. The final words of his address were "We believe the school we this day open is destined to rank among the permanent institutions of the state. While it will pass in time into other and better hands, it will live on, identified with the interest of a great and prosperous city."

According to Norman Bridge and John E. Rhodes,² during the next year a college building was erected at Dearborn and Indiana streets, where a lot had been donated by generous citizens. This is the present site of the headquarters of the American Medical Association. The one story wood structure had a circular roof, an amphitheater, a dissecting room and a chemical laboratory. Part of the cost of the structure was paid by public subscription. Among the forty-six students who attended the second course of lectures, one came from the territory of Iowa and one from the territory of Wisconsin. Austin Flint, who had now become professor of the institutes and practice of medicine, in his introductory address, on "The Reciprocal Duties and Obligations of the Medical Profession and the Public," voiced many of the doctrines of ethics which later were incorporated in the code of ethics of the American Medical Association. About half of the faculty still resided, most of the year, outside the state of Illinois. After the first four years the public authorities decided to erect a public hospital which was to be under the care of the members of the faculty.

Rush Medical College now was known far beyond the state of Illinois. Dr. N. S. Davis came from New York in 1849 to be professor of physiology and pathology, and Prof. Thomas Spencer from Geneva, N. Y., to be professor of the principles and practice of medicine. In 1850 an extraordinary innovation was announced reducing the fees from \$65 to \$35, to enable men "who will practice medicine to properly qualify themselves." In 1857 Prof. William H. Byford of Evansville, Ind., became professor of obstetrics and diseases of women, and Dr. John H. Rauch of Burlington, Iowa, professor of materia medica and medical jurisprudence.

Then came the Civil War. Professor Brainard taught military surgery, Allen taught medicine, Ephraim Ingals medical jurisprudence, and Blaney toxicology. The public hospital was now taken over by the government for a military hospital. After the war the hospital, located at Eighteenth and Arnold streets, became the County Hospital. Ten years later a larger county hospital was built at the present location at Harrison, Wood and Polk streets.

Dr. Brainard returned from Europe in 1866 to find cholera raging in Chicago. He lectured to the college students at 5 p. m. on October 9 and was taken ill with cholera at 3 a. m. He died the following evening.

1. Weaver, George H.: *Beginnings of Medical Education in and Near Chicago. The Institutions and the Men*, Bull. Soc. M. History, Chicago, September 1925.

2. Bridge, Norman, and Rhodes, John E.: *Rush Medical College. Historical and Biographical*, Chicago, Oxford Publishing Company, 1927.

on which day one hundred other deaths from cholera occurred in Chicago. Dr. Blaney then became president of Rush, and Dr. Moses Gunn, professor of surgery at the University of Michigan, was invited to the chair of surgery. Among many other illustrious teachers have been Nicholas Senn, Christian Fenger, John B. Murphy, Bertram Sippy, Walter S. Haines, J. Nevins Hyde, Frank Billings, Truman W. Brophy, William T. Belfield and Edwin R. LeCount. Dr. Blaney was succeeded in 1871 by Prof. John W. Freer, and in that year Rush was completely destroyed in the great Chicago fire. Now homeless, Rush was permitted to use an amphitheater at the County Hospital for lectures; another school offered the use of its dissecting room. The trustees decided to rebuild Rush as near as possible to the County Hospital, and in 1876 the school moved to Harrison and Wood streets, where the two great institutions of learning and mercy have remained.

Rush took the first step in buying an adjacent lot and in building a small hospital before it was determined that the hospital was to pass under the care of the Presbyterian church. Dr. J. P. Ross, professor of clinical medicine and diseases of the chest on the Rush faculty, the founder of the Presbyterian Hospital, secured money, and the trustees in 1883 erected the first two wings of the future hospital. When the state of Illinois chartered the Presbyterian Hospital Association, Rush deeded the lot and unfinished hospital building to the hospital association. The Presbyterian Hospital, which has always been closely affiliated with the college, opened in the fall of 1884.

Rush College was united with the first university of Chicago for only a short time, and with Lake Forest University in 1887. The college became affiliated with the University of Chicago in 1898, and under a new contract the university took over the work at Rush as one of its departments in 1924. The freshmen and sophomores carried on their work in the laboratories of the University of Chicago on the south side and continued the junior and senior years on the west side in the great medical center.

Since the University of Chicago recently established a complete medical school on its south side campus, it has had for a few years two medical schools. The disposition of Rush Medical College again came up for consideration. The decisions and dispositions have been made. The facilities of Rush and its clinic are to be turned over to the Presbyterian Hospital, which in turn becomes affiliated with the University of Illinois. No longer will new students be admitted to Rush. The only students remaining are the seniors who graduate in 1942.

The name of Rush Medical College will be perpetuated, for the present, only in the board of trustees and in the titles of its staff taken into the faculty of the University of Illinois College of Medicine, where they will be designated as Rush professors. The Presby-

terian Hospital staff will be appointed to the clinical staff of the University of Illinois College of Medicine. Future appointments to the Presbyterian Hospital staff will be made from persons nominated by the University of Illinois.

In a century, Rush Medical College has done much for medical education. The faculty and its thousands of graduates have been and are a distinguished group. The great medical west side that centers about Harrison and Wood streets in Chicago, where doctors and nurses are trained to care for the sick, will remain.

Current Comment

SHORTAGE OF SURGICAL INSTRUMENTS THREATENED

Difficulty is being experienced by manufacturers in obtaining materials needed for the manufacture of surgical instruments and supplies and for the manufacture of hospital apparatus and equipment, because of the urgency of the demands of the defense program. The Office of Price Administration and Civilian Supply, created by executive order April 11 and charged with the responsibility, among others, of stimulating provision of the necessary supply of materials and commodities required for civilian use in such manner as not to conflict with military defense needs, has declared it to be of the greatest importance that there be a sustained output of surgical and hospital equipment. Such output is essential "to the maintenance of industrial efficiency and civilian morale." In an effort to make effective a sustained output, the Administrator of the Office of Price Administration and Civilian Supply on July 15 announced a program that assures to the manufacturer the highest civilian preference rating in connection with any order he may place for materials for the manufacture of surgical implements and supplies and for the manufacture of hospital apparatus and equipment.¹ The announcement provides that the preferences granted under the program may not be used to accumulate excessive inventories. At the same time an announcement was made of a program that grants a similar preference rating in connection with orders for materials to be used in the manufacture of eyeglass frames and parts. The steps thus taken by the government to avert an acute shortage in these necessary articles are commendable. The hospital apparatus and equipment and the surgical implements and supplies covered by the priority program announced by the Administrator include adhesive plasters, anesthesia apparatus and supplies, biologicals, antitoxins and serums, clinical thermometers, diagnostic instruments, hospital laboratory equipment and supplies, hospital operating room equipment, hypodermic syringes and needles, surgical and dental instruments, medicinal chemicals, rubber hospital sundries, hospital sterilizers, surgical dressings, x-ray equipment and medical and dental supplies.²

1. Federal Register 6: 3477 (July 16) 1941

2. Federal Register 6: 3776 (July 30) 1941

MEDICAL EDUCATION AND NATIONAL DEFENSE

The health of the people is essential in any program of national defense. Its maintenance requires the services of competent physicians adequate in number. Major Gen. James C. Magee, Surgeon General of the United States Army, elsewhere in this issue¹ notes that the War Department has authorized the issuance of commissions in the Medical Administrative Corps to junior and senior medical students in good standing in recognized medical schools. Those who apply for and receive these commissions will be excluded from the operation of the Selective Service Law of 1940. Nothing, however, has been done to insure that all well qualified first and second year students, and those who have already been accepted for freshman classes starting this fall, will be permitted to pursue their medical studies without interruption. Brig. Gen. Lewis B. Hershey, director of Selective Service, it is true, has declared that there are no replacements for medical students and that they should therefore be regarded as in training for necessary vocations, but local boards have not always followed his advice. If the medical needs of the country are to be met, the training of physicians must not be curtailed. Some means must be found whereby all bona fide medical students and those accepted for enrolment this fall shall be continued in training so that they may ultimately join the ranks of the medical profession.

DOCTORS IN COURT AND LAWYER TACTICS

Frequently physicians are requested to testify in court in behalf of governmental agencies. As public spirited citizens they do this at great sacrifice of time and energy and with no remuneration other than reimbursement for expenses. In cities such as Washington, Chicago and New York, where the Post Office Department, the Food and Drug Administration and the Federal Trade Commission are particularly active, the demands made on the time of such physicians are sometimes inordinately heavy. Government officials have said repeatedly that the enforcement of the laws administered by the agencies mentioned would hardly be possible without this generous, voluntary cooperation of the medical profession. When a physician appears in court in the performance of a civic duty he is usually treated with courtesy and respect. Most practitioners of law recognize the nature of the situation and the professional status of their colleagues in medicine. Some lawyers, however, in their zeal to win, forget the decencies. In a recent hearing before the Federal Trade Commission a number of distinguished medical scientists, Drs. A. J. Carlson, Victor C. Myers and Donald D. Van Slyke, testified for the government against claims made by the Bristol-Myers Company for its product "Sal Hepatica." The claims concerned largely the problem of acidosis. According to an account of the trial these scientists, who were there to perform a

public service, were subjected to an insulting, abusive attack, endeavoring to impeach their scientific objectivity, credibility and truthfulness, and they were assailed then as to their motives and integrity. Apparently the attorneys were not content with an examination of the facts of the testimony. In this instance, it seems likely, the tactics employed will reap their just reward.

RECENT EXTENSION OF ENDEMIC TYPHUS

The origin of endemic typhus fever in the United States is still a matter of speculation. Maxcy¹ in 1928, in a report on the distribution of endemic typhus in the United States, called attention to its prevalence in the Southern states, especially Georgia, Texas, Alabama, Florida, South Carolina, North Carolina, Virginia and Maryland. It was established that the rat was the reservoir host and the rat flea the chief vector, and that the disease is to be differentiated from spotted fever. Meleney,² in a recent article, calls attention to the extension of the disease to new areas. The total number of cases reported since 1929 for all the Southern states from Maryland to Texas and for California shows a rapid increase up to 1933, a sudden drop in 1934 and 1935, a sharp increase in 1936 and 1937, a slight drop in 1938, and an increase in 1939 to the highest number for any one year. The most important area involves the southern part of Georgia, the southeastern part of Alabama, and southern and eastern Texas. Meleney points out further that, despite the control measures instituted in the cities known to harbor the disease, the total number of cases has gradually increased during the past few years. Attention is called particularly to the outbreak of 75 cases in Nashville, Tenn., during the summer and autumn of 1939. The largest number previously for that city in any one year was 11. The studies of Baker, McAlpine and Gill³ in 1934 showed that the disease was spreading from the cities to the rural districts, although the highest incidence, as pointed out by Bowdoin and Boston,⁴ was still in cities with populations of from two thousand five hundred to five thousand. The extension of endemic typhus in the southern United States is due primarily to the migrations of the brown rat (*Rattus norvegicus*) and of the tropical rat flea (*Xenopsylla cheopis*). The railroads and highways are the probable routes by which the reservoir of the disease migrated from the coast to the interior. In the study of the Nashville outbreak in 1939 it was found that the main focus of the disease was in granaries and other establishments close to the railroads entering the cities from the South and Southeast. The appearance of the disease in a number of new cities far from its earlier habitat constitutes a public health problem of increasing importance. The solution lies in a more rigorous rat eradication program.

1. Maxcy, K. F.: The Distribution of Endemic Typhus (Brill's Disease) in the United States, *Pub. Health Rep.* **43**: 3084 (Nov. 23) 1928.

2. Meleney, H. E.: Recent Extension of Endemic Typhus Fever in the Southern United States, *Am. J. Pub. Health* **31**: 219 (March) 1941.

3. Baker, J. N.; McAlpine, J. G., and Gill, D. G.: Endemic Typhus, *Am. J. Pub. Health* **24**: 1068 (Oct.) 1934.

4. Bowdoin, C. D., and Boston, R. J.: A Preliminary Report on the Practical Epidemiology and Control of Endemic Typhus Fever in Georgia, *Am. J. Trop. Med.* **20**: 537 (July) 1940.

1. Magee, J. C.: The Military Emergency and the Medical Profession, this issue, p. 681.

MEDICAL PREPAREDNESS

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.

EMERGENCY MEDICAL SERVICE FOR CIVILIAN DEFENSE

The following letter was mailed to all state and county medical societies and to administrators and chiefs of staff of hospitals

In Bulletin No 1 of the Medical Division, the U S Director of Civilian Defense recommends that all approved general hospitals in states along both seaboards and in industrial areas in the interior proceed without delay with the organization of a field casualty service. Hospitals which have already established emergency medical field units for this purpose should revise their organization so as to conform with the plans outlined in this bulletin. Uniformity in organization is essential if medical field units are to respond promptly and effectively to emergency calls from the local control center. The provision of special medical and surgical equipment for field units should await distribution of Bulletin No 2 of the Medical Division, which will deal with equipment.

Most medical facilities from which the civilian defense organization in each state is to be developed are at the local level. It is therefore advisable that a local chief of Emergency Medical Services be appointed, as the first step in organizing medical facilities for civilian defense in a local area. To facilitate coordination of these facilities, official representation of the medical, public health and nursing professions on the local Medical Advisory Council is necessary. It should be the responsibility of the state Council of Civilian Defense to define defense areas around metropolitan centers and to weld these areas into cooperating units.

In the event of enemy attack, the operation of the local Emergency Medical Service may be sketched as follows. As described in "Organization for Civilian Protection," issued by the U S Director of Civilian Defense on July 17, air raid warnings will come to the local control center from the military establishments in the area and will be relayed to the proper civilian defense officers, information concerning the location and extent of local damage will be received by the control center from air raid wardens or others. Using a spot map showing the location of hospitals, medical supply depots, transportation centers and sites for the establishment of casualty stations and first aid posts, the control center or its substation will call out an appropriate number of Emergency Medical Field Units. To be prepared to respond promptly and effectively, emphasis should be laid in all localities on the necessity for field drills of medical units in collaboration with rescue squads, stretcher teams and other emergency relief services.

In the preparation and execution of these plans, state and local defense councils may avail themselves of the assistance of the liaison officers of the U S Public Health Service attached to headquarters of the Army Corps Area. In the first, second, third and fourth defense area offices, located at Boston, New York, Baltimore and San Francisco, a special medical officer will be assigned for this purpose to the area Offices of Civilian Defense. Requests for information and reports on state and local medical and public health defense activities should be addressed in duplicate to the appropriate area Office of Civilian Defense.

GEORGE BAEHR, M D, Chief Medical Officer.

MEDICAL PROVISIONS FOR CIVILIAN DEFENSE

The activities of the U S Office of Civilian Defense are concerned primarily with the protection of lives and property in the event of enemy action. To its Medical Division is entrusted the responsibility for the preparation of plans for civilian defense designed to prevent or alleviate the medical and public health hazards to which the civilian population may be exposed.

This bulletin is the first of a series of recommendations to state and local directors of civilian defense concerning the augmentation of medical facilities in their area. It presents a simple basic plan for the organization of emergency medical field units related to hospitals, which can be adapted to the needs of any community. It directs attention to the possible future requirements for expansion of hospital facilities both within a community and outside its boundaries. To this end it recommends the immediate preparation of a local inventory, a report of which should be filed in duplicate with the civilian Defense Area Office. It also recommends that steps be initiated in each local area for the rapid expansion of nursing facilities through intensive training of adequate numbers of nursing auxiliaries.

To those who do not as yet appreciate the need for action, I should like to quote from a similar official bulletin issued in England in 1938 just prior to the beginning of hostilities, which describes measures for safeguarding the civilian population.

"The need for (these measures) is not related to any belief that war is imminent. It arises from the fact that the risk of attack from the air, however remote it may be, is a risk that cannot be ignored, and because preparations to minimize the consequences of attack from the air cannot be improvised on the spur of the moment but must be made, if they are to be effective, in time of peace."

Whether or not we regard danger to the lives and the property of our people as imminent, I would urge that immediate steps be taken to carry out these recommendations of the Office of Civilian Defense in every state along our seaboards and in industrial areas in the interior.

F H LA GUARDIA,
U S Director Civilian Defense

Washington, D C
July 30, 1941

MEDICAL DIVISION—BULLETIN NO. 1 Prepared by the Office of Civilian Defense, Washington, D C

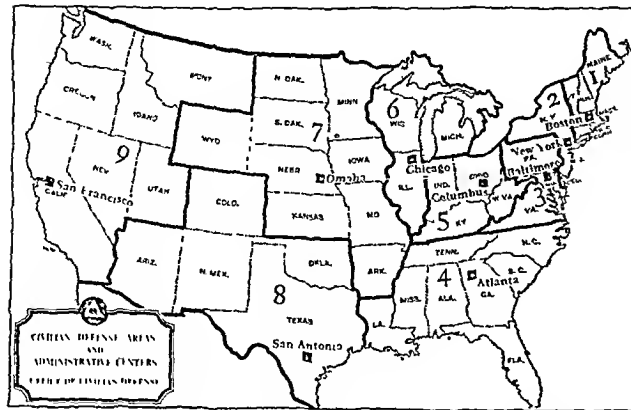
EMERGENCY MEDICAL SERVICE

Current developments in technique of warfare leading to the possibility of unheralded bombing of civilian populations as well as potential hazards from sabotage, make imperative the preparation of facilities for providing medical service to casualties that may result from such incidents. The need for these emergency facilities may not arise, but their organization must be a fundamental part of our civilian defense program. It is the purpose of this bulletin to outline the essentials of an emergency medical service and to describe a type of organization by which these essentials may be achieved.

The Medical Division of the Office of Civilian Defense is charged with the preparation of plans for emergency medical

service and equipment. It also maintains liaison with other federal agencies concerned with public health and medical care. In addition, an officer of the United States Public Health Service is designated to serve as medical liaison to each Civilian Defense (see map) Area Office.

Because of geographic and administrative diversity in various parts of the country, general plans are presented as recom-



Area offices 1 Boston. 2 New York. 3 Baltimore. 4 Atlanta, Ga. 5 Columbus, Ohio. 6 Chicago. 7 Omaha. 8 San Antonio, Texas. 9 San Francisco.

mendations to state and local defense councils for adaptation to meet the needs of the different areas. The general adoption of a common pattern in organization and equipment for civilian defense is highly desirable so that adjacent communities may pool or exchange emergency resources in time of need.

Local administrative areas for civilian defense will frequently extend beyond municipal or other political boundaries. Such administrative civilian defense areas may be defined by State Defense Councils. It is important that the Emergency Medical Service be integrated at all administrative levels with welfare, police, and other emergency services.

LOCAL CHIEF OF EMERGENCY MEDICAL SERVICE

An Emergency Medical Service should be organized as a section of the local defense organization in each area under a director responsible to the local director of civilian defense. It is recommended that the local Chief of Emergency Medical Service be a physician of broad experience and administrative capacity, such as a health officer or an experienced hospital administrator. It should be his first duty to make an inventory of the community's medical resources and facilities and to prepare local plans, develop an organization and provide for the training of personnel to carry out the functions of the Emergency Medical Service outlined below.

LOCAL MEDICAL ADVISORY COUNCIL ON CIVILIAN DEFENSE

The local Chief of Emergency Medical Service should be chairman of a medical advisory council. This council might well include the local health officer, an experienced hospital administrator, a physician recommended by the local medical society because of his technical experience and executive ability, a registered nurse and a representative of the American National Red Cross and other voluntary agencies.

EMERGENCY MEDICAL FIELD UNITS

In states on both seaboards and in vulnerable industrial areas in the interior, general hospitals, both voluntary and governmental, including veterans administration facilities and the marine hospitals of the United States Public Health Service, should organize emergency medical field units and assemble basic equipment. An emergency medical field unit should consist of two or more squads, and a physician should be appointed to command the entire unit. Squad leaders, in turn, should be designated. The size of the emergency field unit should be in proportion to the bed capacity of the parent hospital. All members of field units should be instructed in first aid,

including care of burns, prevention of shock, control of hemorrhage, emergency treatment of fractures and wounds, and in the technic of decontamination.

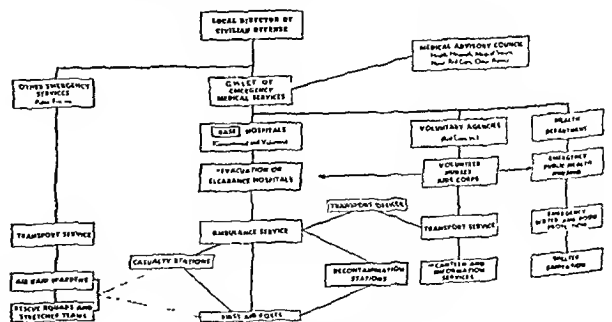
Personnel.—Small Squads: In hospitals of less than two hundred beds it is recommended that the emergency field unit consist of two squads, one for each twelve hour shift of the day. Each squad should be composed of two physicians, two or more nurses and two or more orderlies or nurses' aids and be capable of functioning, if necessary, as two separate teams. At least one unit of this size is advisable for a population up to 25,000.

Large Squads: In hospitals of more than two hundred beds the emergency field unit should consist of two squads of four doctors, four or more nurses and four or more orderlies or nurses' aids, one of the physicians in each squad to act as squad leader. Each of the squads should be on first call during a twelve hour period of the day. The personnel and equipment of a squad should be divisible into four teams capable of functioning if necessary at separate sites of disaster. At least one unit of this size, or two units with small squads, are advisable for populations up to 50,000.

In hospitals of more than three hundred and fifty beds the emergency field unit should consist of four or more large squads, each headed by a squad leader and capable of functioning if necessary as multiple teams. In these large hospitals at least two squads should be on call during each twelve hour period of the day, alternating on first call on alternate days. An emergency field unit of four large squads, or two units of two large squads each, are advisable for a population of 100,000. In large cities the desirable minimum would be four large squads (sixteen physicians and assistants) per one hundred thousand.

It will be advisable to organize physicians and nurses engaged in private practice in the area into reserve emergency field units related to hospitals. In areas with small hospitals whose resident staffs cannot be depleted, the primary emergency unit of a hospital may be made up in whole or in part of practitioners from the community.

Transportation.—A hospital ambulance, station wagon, small truck or passenger vehicle will be adequate to transport the personnel of a squad and their equipment to the site designated by the local director of civilian defense for the establishment of a casualty station. On return trips to the hospital with casualties such vehicle will be available for transportation of additional squads and equipment if required. Hospitals which do not maintain an ambulance service will find it necessary to provide for transportation, utilizing private or municipal ambulance services, small vehicles of the police, fire or other municipal departments, station wagons or passenger cars. Special



FIELD OF EMERGENCY

The immediate command of all local civilian defense forces, including the medical, and the orders for emergency mobilization of these forces should be the responsibility of the person officially designated as director of civilian defense for the area. He must possess full information concerning emergency medical facilities available in the area.

• Functions projected for future organization.

•• In some communities, caution, information, evacuation and religious services will be the responsibility of the welfare department.

racks (see separate memorandum of the Medical Division of the Office of Civilian Defense) can be installed in private ambulances and in station wagons and small trucks so that they may

be utilized in an emergency for the transportation of four or more stretcher patients at a time.

Private vehicles recruited for ambulance purposes by the American National Red Cross or other agency should be assigned to a hospital or to a designated parking center under the control of a transport officer.

Medical and Surgical Equipment.—The medical and surgical equipment for a squad should consist of a working supply for each physician's team and a reserve supply of sterile dressings and equipment in drums or packs from which the working supplies of the teams may be replenished. The working supply of each team is best carried in a portable bag, box or haversack provided with suitable compartments. A list suggesting minimum equipment will be available in a separate memorandum.

The provision of working supplies in a separate container for each physician will permit the squad of a casualty station to split off teams of one physician and assistants who can be dispatched to set up subsidiary first aid posts at other sites.

Casualty Stations and First Aid Posts.—On arrival at the site of a disaster, the squads of the emergency medical units which have responded to the appropriate alarm will set up casualty stations at the sites designated by the local director of civilian defense. The location of a casualty station should provide safety, shelter and accessibility. Stretchers, cots and blankets will have arrived in a truck carrying the rescue squad of the police, fire or other municipal department. Until released by authority of the local director of civilian defense, the physicians and nurses of the emergency medical unit should remain at their station, to which the injured will be directed or transported on stretchers by the rescue squads and volunteers enlisted by them for this purpose. The work of the casualty station is to be limited to emergency first aid procedures—the relief of pain, prevention of shock, control of hemorrhage, care of burns, application of simple splints and of surgical dressings and, not least, the preservation of morale by the establishment of confidence. The seriously injured will be evacuated as rapidly as possible by ambulance or other vehicle to a hospital. Those with minor injuries will go to their homes or to temporary shelters.

If necessary, the squad leader in charge of a casualty station may split off one or more teams of one physician and assistants, dispatching them to set up subsidiary first aid posts at other sites.

It will be advisable for the local Chief of Emergency Medical Service to prepare a spot map of the area to indicate all outpatient clinics, health centers and their substations, and all police and fire stations or other sites which could serve in an emergency as casualty stations or first aid posts. He should also maintain an inventory of available transportation.

Decontamination Stations.—A subsequent bulletin will deal with the structural requirements of decontamination stations and with details concerning the care of casualties from chemical agents.

Rescue Squads and Stretcher Teams.¹—Casualties will be conducted on foot or transported on stretchers to the nearest casualty station or first aid post by rescue squads of the police, fire or other municipal department. These rescue squads may be assisted by air raid wardens and by volunteers enlisted at the time. Police and fire reserves should be well trained in first aid and stretcher bearing and organized into rescue squads of four or eight, headed by a squad leader. By the addition of volunteers, a rescue squad is capable of being multiplied into as many stretcher teams as there are members, each trained member becoming the leader of a team.

Provision should be made for the storage of standard stretchers, collapsible cots and blankets in designated locations, such as police and fire stations, hospitals, health centers or

other suitable place. The number of standard stretchers stored in each police and fire station should be equal to the number of members of the station's rescue squads.

It will be advisable to have three times as many collapsible cots as stretchers and two blankets for every stretcher and cot. This equipment should be transported by the truck carrying the rescue squad to the site of the casualty station or first aid post.

Records.—Identification tags should be affixed to the injured by the rescue squad or else immediately on arrival at the casualty station or first aid post. A duplicate record should be kept in a book, which should be standard equipment of each medical emergency team. The record should include the name or other identification, address, person to be notified, diagnosis, first aid administered, morphine if given, and disposition. A form approved by the Medical Division of the Office of Civilian Defense will be found in a supplementary memorandum on equipment. One nurse or nurses' aide should be assigned the responsibility for these records. The forehead of tourniquet patients and of patients urgently requiring priority attention should be marked *TK* or *U*, respectively, with a red crayon skin pencil or lipstick.

Drills.—It is recommended that drills be called at each hospital once a month by the chief or president of the professional staff. A record of each drill should be kept by him, which will show the time required for complete mobilization of a squad at the designated point of departure and the condition of equipment and transportation.

It is also recommended that field drills be called unexpectedly by the local Director of Civilian Defense at least every three months for each hospital. Each field drill might appropriately include one or more rescue squads of the police, fire or other municipal department, who will assist the emergency medical squads in setting up casualty stations at designated sites. The official in command at the drills should inspect the clothing, equipment and transportation of all participating units and render a report to the Chief of Emergency Medical Service and to the local Director of Civilian Defense on the promptness and efficiency of each unit. The larger field drills might include the canteen and other emergency relief services of the welfare department or of the local chapter of the American Red Cross or other local agency.

BASE AND EVACUATION OR CLEARANCE HOSPITALS

In order to prepare for the release of hospital beds within the area for large numbers of casualties, the Chief of Emergency Medical Service should make an inventory of hospitals, convalescent homes and other institutions within a radius of 50 or more miles, to which maternity services, children's wards, certain categories of the hospitalized sick and convalescents could be transported. Provision should also be made for the assembly and storage of an adequate supply of hospital cots, mattresses, blankets and other equipment which may be required to provide for emergency increase in bed capacity of voluntary and governmental hospitals. In the event of actual destruction of hospitals, it may become necessary to consider evacuating casualties to base hospitals and transforming hospitals near the scene into evacuation or casualty clearance hospitals.

On receiving the first emergency call, the hospital should order all members of its visiting staff by telephone or police radio call to report to the hospital and stand by for the care of the injured received from the casualty stations and first aid posts.

AUGMENTATION OF NURSING SERVICES

In the face of the need for rapid expansion of nursing services for civilian defense, the number of available nurses is being depleted because of the requirements of the military forces and the public health and industrial hygiene services. An attempt is being made to compensate for this deficiency by the training of subsidiary hospital workers through the NYA, WPA and other programs. The Office of Civilian Defense in collaboration with the American National Red Cross has revised the instruction curriculum for volunteer nurses' aides so as to provide for a period of intensive practical instruction in hospitals

1. Rescue squads consist of auxiliaries of the police or fire department, who are trained and equipped for clearance and demolition work. Although their function is to extricate the injured, they have also had training in first aid and in stretcher bearing so that each member can serve as the leader of a stretcher team. Their first aid services at the time of the disaster should be restricted solely to most urgent needs such as the arrest of profuse bleeding or the application of a leg splint. Their primary object should be to remove the injured as soon as possible from the scene of danger with the aid of volunteer stretcher teams and get them to a first aid post or casualty station.

under the direction of a special instructor in charge of the training and use of volunteer nurses' aides. On completion of this practical training, volunteer nurses' aides will become eligible to assist nurses in wards and outpatient clinics of hospitals or in visiting nurse, public health, industrial hygiene and school health services. Volunteer nurses' aides are intended to supplement the work of the nurse so that she may be able to serve a greater number of patients. It is recommended that the local Chief of Emergency Medical Service in collaboration with hospital executives and principals of schools of nursing reorganize and intensify the training and the use of volunteer nurses' aides in appropriate hospitals in accordance with the new schedule of the Office of Civilian Defense and the American National Red Cross.

FIRST AID

First aid instruction should be provided for as large a part of the general population as possible. The local Chief of Emergency Medical Service should, in collaboration with the local chapter of the American National Red Cross, provide training in first aid for at least 5 per cent of the personnel of all municipal departments and large business and industrial establishments. On completion of training, this 5 per cent should constitute the first aid corps of their municipal depart-

ment, business or factory group. The leaders of these corps should be encouraged to take the instructor's course of the American National Red Cross so that, when qualified, their services might be utilized for the extension of first aid instruction to all employees and to the general population of the community.

The first aid course for civilian defense prepared by the American National Red Cross in collaboration with the Office of Civilian Defense is recommended for first aid training. Instructors qualified by the Red Cross may give this training under the direction of the local chapter of the American Red Cross, the local health department or any other voluntary or governmental agency.

An intensive course of practical training (five two hour lessons) has been prepared by the Medical Division of the Office of Civilian Defense and the American National Red Cross as supplementary instruction for members of emergency medical field units and for nursing auxiliaries and members of other civilian defense units (police officers, firemen and volunteer auxiliaries) who have had previous instruction in first aid. It is designed as a refresher course for the purpose of reviewing and practicing those first aid procedures which are most important in civilian defense.

COMMITTEE ON MEDICAL PREPAREDNESS CONSIDERS ESTABLISHMENT OF PRO- CUREMENT AND ASSIGNMENT AGENCY

The Committee on Medical Preparedness of the American Medical Association met in Washington, D. C., August 19 and 20 to consider the resolution adopted by the House of Delegates at the session in Cleveland in June relative to the establishment of a procurement and assignment agency to be concerned with the provision of medical personnel for the Army, Navy, Public Health Service and other agencies. The committee considered also other problems presented by the physicians, such as the question of the inventory of the medical profession, deferment of medical students, interns and residents, provision of personnel for the Selective Service boards and reimbursement of such physicians, the conduct of the survey of selectees with regard to the problem of rehabilitation, and other related problems. On August 19 a dinner was held for further discussion of such problems, including as representatives of the Committee on Medical Preparedness:

Dr. Irvin Abell
Chairman of the Health and
Medical Committee in the
Federal Security Admin-
istrator's Office

Chairman, Committee on
Medical Preparedness

Dr. Arthur W. Booth
Chairman, Board of Trus-
tees of the American
Medical Association
Member, Committee on
Medical Preparedness

Dr. Frank H. Lahey
President, American Med-
ical Association
Member, Committee on
Medical Preparedness

Dr. Fred W. Rankin
President-Elect, American
Medical Association
Member, Committee on
Medical Preparedness

Dr. Olin West
Secretary, American Med-
ical Association
Member, Committee on
Medical Preparedness

Dr. Morris Fishbein
Editor of THE JOURNAL OF
THE AMERICAN MEDICAL
ASSOCIATION
Member, Committee on
Medical Preparedness

Dr. Walter G. Phippen
Member, Committee on
Medical Preparedness

Dr. James E. Paullin
Member, Committee on
Medical Preparedness

Dr. John H. O'Shea
Member, Committee on
Medical Preparedness

Dr. Charles A. Dukes
Member, Committee on
Medical Preparedness

Dr. Roy W. Fouts
Member, Committee on
Medical Preparedness

Dr. Harvey B. Stone
Member, Committee on
Medical Preparedness

Dr. Samuel E. Thompson
Member, Committee on
Medical Preparedness

Dr. R. G. Leland
Director, Bureau of Medi-
cal Economics, American
Medical Association

Mr. Watson B. Miller
Assistant to the Federal
Security Administrator

Dr. Warren F. Draper
Assistant Surgeon General,
United States Public
Health Service

Dr. James A. Crabtree
Surgeon, United States
Public Health Service
Secretary, Health and Med-
ical Committee in the
Federal Security Admin-
istrator's Office

Dr. L. G. Rowntree
Medical Director, Selective
Service System

Rear Admiral Ross T.
McIntire
Surgeon General, United
States Navy

Capt. Luther Sheldon Jr.
United States Navy Medi-
cal Corps

Comdr. Joseph J. Kaveny
United States Navy Medi-
cal Corps

Col. George F. Lull
United States Army Medi-
cal Corps

Dr. James C. Magee
Surgeon General, United
States Army Medical
Corps

NAVY MEDICAL OFFICERS INTER- CHANGE DUTY

The Navy Department, August 1, announced the following changes of station for three captains of the Medical Corps:

Capt. Clarence J. Brown, M. C., U. S. Navy, from the U. S. Naval Academy, Annapolis, Md., to the U. S. Naval Station, Guantanamo, Cuba, where he will be senior medical officer.

Capt. Oscar Davis, M. C., U. S. Navy, from the Norfolk Naval Hospital, Portsmouth, Va., to the U. S. Naval Academy, Annapolis, Md., where he will be in charge of eye, ear, nose and throat work.

Capt. James F. Hooker, M. C., U. S. Navy, from the U. S. Naval Station, Guantanamo, Cuba, to the Norfolk Naval Hospital, Portsmouth, Va., where he will be in charge of eye, ear, nose and throat work.

OFFICERS AT STATION HOSPITAL AT FORT SHERIDAN

The following medical reserve officers were reported on duty at the Station Hospital, Fort Sheridan, Ill., May 29:

BECKER, Harry G., Captain.
BURKHART, Jean M., 1st Lieut.
BUSHNELL, Lowell F., 1st Lieut.
DOUD, Ernest A., 1st Lieut.
FISHER, Seymour, Captain.
HO, Kwan Heen, Major.
JOSSELYN, Livingston E., 1st
Lieut.
KLIGERMAN, Sidney, 1st Lieut.
MAMMOSE, Lambert F.,
Captain

McKINLEY, Hugh A., Captain.
MILLER, Herbert P., Lieut. Col.
MUMLER, William C., 1st Lieut.
PEARSON, Emmet F., Captain.
SCHIFF, Joseph H., 1st Lieut.
SWINTKOWSKI, Stanley D.,
Captain
VOLLMAR, George K., 1st Lieut.
WAFFLE, Robert L., Captain.
ZOLT, Nathan, 1st Lieut.

CORRECTION

Lieutenant Colonel Brodtkin on Active Duty.—The name of Lieut. Col. Henry A. Brodtkin of the New Jersey National Guard was inadvertently omitted from the list of National Guard Medical Officers in active service from New Jersey as published in THE JOURNAL, July 26, page 299. Lieutenant Colonel Brodtkin, who is from Newark, has been serving with the 44th Division at Fort Dix, New Jersey, since last September.

ARMY RESERVE OFFICERS ORDERED TO ACTIVE DUTY

WAR DEPARTMENT

The following additional medical reserve corps officers have been ordered to extended active duty by the War Department, Washington, D. C.:

ABRAMSON, Samuel R, 1st Lieut, New Orleans
ALIEY, Leon Arthur, Major, Middleboro, Mass
ANDRUS, Frederick Henry, 1st Lieut, Akron, Ohio
AVERY, Noyes Latham, Jr, 1st Lieut, Grand Rapids, Mich
BALKIN, Samuel G, Captain, Minneapolis
BLUMSTEIN, Charles Lewis, 1st Lieut, New Orleans
BRADSHAW, Frederick Joseph, Captain, St Cloud, Minn
BRADY, George Clark, 1st Lieut, Buffalo
BROWN, Delmer Jencks, 1st Lieut, Takoma Park, Md
CAPRIO, Frank Samuel, Captain, Northport, L I, N. Y.
CARTER, William Howard, 1st Lieut, Ravenna, Ohio
CRAIG, Paul C, Captain, Reading, Pa
DEES, James Gordon, Captain, Philadelphia, Miss
DINGMAN, Reed Othelbert, 1st Lieut, Ann Arbor, Mich
EMERY, Wilfred Hilton, 1st Lieut, Los Angeles
EVANS, Jack McCallum, 1st Lieut, Kenmore, N Y
FAWCETT, Robert Miles, 1st Lieut, Pittsburgh
FIORITO, Joseph Anthony, 1st Lieut, Syracuse, N Y
FURZE, William Everett, 1st Lieut, Fresno, Calif.
GARTLAN, Bernard Walter, 1st Lieut, Washington, D C
GEARHART, Merriam, 1st Lieut, Philadelphia
GIBSON, Walcutt Wilfred, 1st Lieut, Washington, D C
GILBERT, Wallace Guy, 1st Lieut, Los Angeles
GIST, Harold Howard, 1st Lieut, Cleveland
GROSS, Norman Harold, 1st Lieut, Salt Lake City
HAMPTON, Hiram Philip, 1st Lieut, Rochester, Minn
HEID, George J, Jr, 1st Lieut, Reading, Pa
HITCHKO, Michael Joseph, 1st Lieut, West Los Angeles, Calif.
JARRETT, John Tallman, 1st Lieut, Richmond, Va
JOHANSON, Vincent Eric, 1st Lieut, San Francisco
KANMER, Walter Fred, 1st Lieut, New Glarus, Wis
KIBBY, Sydney V, Lieut Colonel, Los Angeles
KIMBROUGH, Robert Cooke, Jr, 1st Lieut, Ann Arbor, Mich
KLINE, Edward Malton, Captain, Cleveland Heights, Ohio
LANGNER, Charles A G, Captain, Brownsville, Texas

LAUGHLIN, Victor Cavanna, Major, Cleveland
LEEDE, William Edward, 1st Lieut, Madison, Wis
LOVGREN, Robert Ellsworth, 1st Lieut, Omaha
MADDING, Gordon Francis, 1st Lieut, Rochester, Minn.
MANLY, Wilbur Francis, 1st Lieut, Chicago
MAY, Stanton Bonham, 1st Lieut, Los Angeles
MEASE, William Harvey, 1st Lieut, East Pittsburgh, Pa
MEISENBACH, Albert Edward, Jr, 1st Lieut, Washington, D. C.
MELYN, John Anthony, 1st Lieut, Chicago
MEREDITH, Thomas Neil, 1st Lieut, Pittsburgh
NEALON, William Kennedy A, 1st Lieut, Pittsburgh
OSBOURN, Raymond Allen, 1st Lieut, Washington, D C.
OVERTON, Lewis Marvin, Captain, Des Moines, Iowa
PATTERSON, Donald Scott, 1st Lieut, Brooklyn
REYNOLDS, Stephen, 1st Lieut, Santa Barbara, Calif.
RICE, Earl Milford, Major, Charleston, S. C.
RIEHEL, Leslie, 1st Lieut, Los Angeles
ROMANSKY, Monroe James, 1st Lieut, Hartford, Conn.
RUTHERFORD, Robert B, 1st Lieut, Peoria, Ill.
RUUSKA, Paul E, 1st Lieut, Richmond, Va
SCHWARZ, Alfred J, Captain, San Anselmo, Calif
SCHWEITZER, Julius Paul, 1st Lieut, Toledo, Ohio
SECUNDA, Lazarus, Captain, Brighton, Mass
SELLING, Philip, 1st Lieut, Portland, Ore
SKOLFIELD, Mazel, Captain, Salt Lake City
SNYDER, Maurice Wilson, 1st Lieut, Manor, Pa
STER, Vernon Carl, 1st Lieut, Oakland, Calif
SUNDQUIST, Everett Lloyd, 1st Lieut, Springfield, Ore
SVOBODA, Frank Charles, Major, San Diego, Calif.
TRUMP, Frank Austin, Captain, Ottawa, Kan
VINCENT, Bayard Richard, 1st Lieut, New York
WEED, John Conant, 1st Lieut, New Orleans
WERNER, Samuel, 1st Lieut, Billings, Mont.
WILLIAMS, George D, Major, St Louis
WOOD, George Oviatt, 1st Lieut, Rochester, Minn
WOODRUFF, Marston True, Captain, Philadelphia
WORSELY, Thomas L, 1st Lieut, Rocky Mount, N C

Orders Revoked

PRATT, Thomas Dennis, 1st Lieut, Brookline, Mass

SECOND CORPS AREA

The following additional medical reserve corps officers have been ordered to active duty by the Commanding General, Second Corps Area, which comprises the states of New York, New Jersey and Delaware:

ALLEN, Herbert B, 1st Lieut, Harrison, N. Y., Fort Dix, N. J.
BARNES, Earle E, 1st Lieut, Lowville, N. Y., Pine Camp, N. Y.
BERNHARD, Joel A, 1st Lieut, East Orange, N. J., Fort Bragg, N. C.
CARRUTHERS, Roderick J, 1st Lieut, Syracuse, N. Y., Fort Ontario, N. Y.
CLARK, Clarence L, 1st Lieut, Ballston Spa, N. Y., Fort Dix, N. J.
DENZER, Frank L, 1st Lieut, Brooklyn, General Dispensary, New York
GERSON, Stanley, 1st Lieut, West New Brighton, N. Y., Madison Barracks, N. Y.
HEALY, Edward G, 1st Lieut, Buffalo, General Dispensary, New York.
HORNE, Robert P, 1st Lieut, Skaneateles, N. Y., Carlisle Barracks, Pa.

Orders Revoked

BAXT, Sydney J, 1st Lieut, Paterson, N J
BELLANTONI, Adolph J, 1st Lieut, New York
BENSON, Murray, 1st Lieut, New York
BIASII, Andrew A, 1st Lieut, Elmira, N. Y.
BROWN, Walter E, Jr, 1st Lieut, Schenectady, N Y
COSTA, Joseph A, 1st Lieut, Bedford Hills, N Y.
CRUNDEN, Allan B, Jr, 1st Lieut, Montclair, N. J.
FRANCO, Bragio, 1st Lieut, New York.
FRIEDMAN, Eliot M, 1st Lieut, Utica, N. Y.
FRUCHTBAUM, Robert P, 1st Lieut, Nutley, N J
GERSH, Irving, 1st Lieut, New York
GOLDSTEIN, Sol R, Captain, Rochester, N. Y.
GREELEY, Horace, Jr, Major, Brooklyn
HARTSTEIN, Edward, 1st Lieut, 12th Infantry, Fort Dix, N J.
JASPIN, George R, 1st Lieut, Rockville Centre, N. Y.
JONES, Courthnd S, Jr, 1st Lieut, Fort Niagara, N. Y.

KNOFF, Albert A, 1st Lieut, New York
LA RAJA, Raymond J, 1st Lieut, Brooklyn
LYNCH, Edward T, 1st Lieut, Elizabeth, N. J.
MANDOUR, Brahm A, 1st Lieut, Utica, N. Y.
MAYER, Hyman R, 1st Lieut, Woodside, N. Y.
MOORE, Dean C, 1st Lieut, East Orange, N. J.
MORIARTY, Webster M, Captain, Saratoga Springs, N. Y.
PROVISOR, Benjamin, 1st Lieut, Passaic, N. J.
SARAJIAN, Aram M, 1st Lieut, West Englewood, N. J.
SAYET, Maxwell M, 1st Lieut, New York.
SCHAUS, James P, 1st Lieut, Fort Niagara, N. Y.
SETTEL, Edward, 1st Lieut, Brooklyn
SHLESINGER, Julius H, 1st Lieut, College Point, N. Y.
STRINGER, Sydney W., Captain, Syracuse, N. Y.
THORNE, George D, 1st Lieut, New York.
TRAVIS, Richard E, 1st Lieut, Hornell, N. Y.
TYLAR, Norman E, Captain, Windsor, N. Y.

ORDERED TO FOREIGN DUTY

FICK, Raymond Livingston, 1st Lieut, Lewistown, Mont, Station Hospital, Dutch Harbor, Alaska.
FICKLIN, George Clifford, 1st Lieut, Sitka, Alaska, Sitka, Alaska.
GOAD, Lloyd Henry, 1st Lieut, El Paso, Texas, Army Medical Corps, Manila, P. I.
HARDAWAY, Robert Morris, III, 1st Lieut, Schofield Barracks, Hawaii, 8th Field Artillery, Schofield Barracks, Honolulu, Hawaii.
HUCHERSON, Denman Carter, 1st Lieut, Lufkin, Texas, Panama Canal Department, Quarry Heights, Balboa Heights, Canal Zone.
MERKEL, Emil Edwin, 1st Lieut, Corregidor, P. I., Station Hospital, Fort Mills, Corregidor, P. I.

SHARP, Mahlon Samuel, 1st Lieut, Schofield Barracks, Hawaii, 11th Medical Regiment, Schofield Barracks, Honolulu, Hawaii.
SMITH, Donald H, 1st Lieut, Fairview, Okla, Hospital, Fort Stotsenburg, Philippine Islands
TOPIC, John Richard, 1st Lieut, Nevada City, Calif, Annette Island Landing Field, Metlakatla, Alaska.
TOUSIGNANT, Albert Noel, Captain, Oconto, Wis, Sternberg General Hospital, Manila, P. I.
WHITE, Raymond Leroy, 1st Lieut, Santa Maria, Calif., Fort Shafter, Honolulu, Hawaii.
WILSON, Charles Henry, Major, New York, Sternberg General Hospital, Manila, Philippine Islands.

ORGANIZATION SECTION

MEDICAL LEGISLATION

MEDICAL BILLS IN CONGRESS

Change in Status.—S. J. Res. 104, introduced by Senator Langer, North Dakota, on August 19, passed the Senate on August 21. The resolution proposes to create an Encephalitis Control Board, to consist of six members, one member to be the Surgeon General of the Public Health Service, who is to serve as chairman, one member to be an officer or employee of the Department of Agriculture, to be appointed by the Secretary of Agriculture, and one member from each of the states of Minnesota, Montana, North Dakota and South Dakota, to be appointed by the Surgeon General. The board is to be authorized, in cooperation with the United States Public Health Service and the health authorities of the states, to investigate and study the origin and causes of encephalitis. The board is to be granted the power to (1) put under quarantine such areas as it deems necessary to prevent the spread of encephalitis, (2) enter any hospital or other place to examine any patient

who has or is suspected of having encephalitis, (3) order and conduct necropsies on the body of any person who has died or is suspected of having died of encephalitis, (4) conduct such other investigations and examinations as are deemed necessary to determine the origin and causes of encephalitis or to find a cure therefor. The board is to provide for the establishment of a laboratory in Bismarek, N. D., which is to be available for use by the health authorities of any state or the Dominion of Canada. The resolution proposes to authorize the annual appropriation of such sums as may be necessary to carry out its provisions and the immediate appropriation of \$3,000,000 for such purposes.

Bill Introduced.—S. 1861, introduced by Senator Murdock, Utah, for himself and for Senator Gillette, Iowa, proposes to permit chiropractors to treat injured federal employees entitled to the benefits of the United States Employees' Compensation Act.

WOMAN'S AUXILIARY

Arkansas

Mrs. A. G. Lee, Mrs. J. F. Williams and Mrs. A. W. Roberts entertained the Bowie and Miller auxiliary at the home of Mrs. S. W. Alston. The Bowie and Miller auxiliary won second prize in the national Hygeia contest and at a dinner April 25 honored Mrs. William Hibbitts, president of the auxiliary to the Texas Medical Association, and Dr. Preston Hunt, president of the association. Mrs. J. T. Robison was general chairman of arrangement. The following officers were named for the ensuing year: Mrs. L. H. Lanier, president; Mrs. R. R. Kirkpatrick, president-elect; Mrs. Allen Collom Jr., first vice president; Mrs. R. H. T. Mann, second vice president; Mrs. T. F. Kittrell, third vice president; Mrs. P. H. Phillips (Ashdown), fourth vice president; Mrs. N. B. Daniel, recording secretary; Mrs. E. M. Watts, corresponding secretary; Mrs. A. G. Lee, treasurer; Mrs. S. A. Collom, historian; Mrs. Roy Baskett, publicity secretary, and Mrs. Harry Murry, parliamentarian. Winners of a public school essay contest on health were presented. The subject was "Health as a First Line of National Defense." Mrs. J. T. Robison discussed "Ethics for Doctors' Wives."

The Woman's Auxiliary to the Pulaski County Medical Society met recently at the home of Mrs. M. E. McCaskill. The president, Mrs. S. C. Fulmer, presided. Mrs. Paul Fulmer reported \$79.20 profits from a book review and rummage sale for the Student Loan Fund. Mrs. W. A. Lamb, public relations chairman, reported on the cancer control movement. Mrs. H. A. Higgins reported sixty-nine garments made for the Arkansas Children's Home and Hospital.

Mrs. Charles T. Chamberlain was elected to head the auxiliary to the Sebastian County Medical Society for the ensuing year at a meeting, April 7, at the home of Mrs. W. R. Brooksher Jr. Other officers are: Mrs. Bert Ware, secretary, and Mrs. J. L. Kellum, treasurer. Mrs. I. Fulton Jones, captain for the auxiliary during the cancer control campaign, reported that auxiliary members contributed \$103 to the membership fund.

Georgia

The auxiliary to the Richmond County Medical Society met at the home of Mrs. Lombard Kelley in Augusta, Mrs. Lucius Todd, presiding. The treasurer reported sending \$50 to the county society to defray expenses for a guest speaker at one of their meetings, this to be known as the Auxiliary Lecture. Mrs. H. G. Banister, president of the Woman's Auxiliary to the Medical Association of Georgia, talked and Mrs. Richard Torpin gave a paper on Jane Todd Crawford. Dr. Lorce

Florence of Athens, first woman to graduate from the University of Georgia School of Medicine, talked on "Women in Medicine."

Mississippi

The Four-County Unit to the Thirteen Counties Auxiliary met March 4 at the home of Mrs. A. J. Stacy in Tupelo. Dr. W. H. Anderson reviewed the duties of doctors' wives. Mrs. W. L. Orr gave an article on the country doctor from *Hygeia*.

New York

A talk by Dr. Adele E. Strecesman, chairman of the advisory council, a lecture by Mrs. Lewis P. Addoms on "The Motion Picture Council" and a book review by Mrs. C. A. Peale gave the February assemblage of doctor's wives of Kings County an afternoon of entertainment. Mr. E. A. Griffin has donated a piece of needlepoint to be sold, the proceeds of which will be used for the Physicians' Home, Incorporated.

The Albany county auxiliary heard Dr. Haven Emerson of Columbia University speak on "Compulsory Health Insurance or Voluntary Sickness Insurance." This campaign is being sponsored by the auxiliary under the direction of its president, Mrs. A. L. Madden.

Oregon

The Multnomah county auxiliary raised \$266 for the Student Loan Fund at a raffle at the home of Mrs. Charles H. Manlove.

Pennsylvania

About 25 members of the Warren County medical auxiliary met in Warren, May 26, at a luncheon in honor of Mrs. Maxwell Lick and Mrs. James Delaney, both of Erie, state president and district counselor, respectively. Mrs. Lick spoke on the relationship of the physician's wife to the community.

South Carolina

The Woman's Auxiliary to the Pickens County Medical Society held a recent meeting at the home of Mrs. W. B. Turman, Easley. Mrs. P. E. Swords, Liberty, presided. Mrs. E. F. Wyatt gave a talk on "Horse and Buggy Days" with incidents of the early practice of her husband.

Texas

The Henderson county auxiliary observed the annual "Doctor's Day" by honoring physicians of Henderson County with a banquet at the Henderson County Woman's Club, with Mrs. Robert Hodge, president of the auxiliary, as general chairman. Dr. W. W. Bauer, associate editor of *Hygeia*, after the dinner addressed a large audience at the Presbyterian Church.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Personal.—Ernest O. Lawrence, Ph.D., professor of physics and director of the radiation laboratory of the University of California, Berkeley, recently received the honorary degree of doctor of science from Harvard University. Dr. Lawrence is the inventor of the cyclotron and a Nobel Prize winner.

The Lane Lectures.—Dr. Cecil K. Drinker, professor of physiology, Harvard Medical School, dean and professor of physiology in the graduate school and dean of the school of public health of Harvard University, Boston, will deliver the twenty-eighth series of Lane Medical Lectures at Stanford University School of Medicine, San Francisco, on the general subject of the lymphatic system. He will give the lectures on October 6, 10, 13, 17 and 20.

New Health Officer of Los Angeles County.—Dr. Wilton L. Halverson, health officer of Pasadena, has been appointed in charge of the Los Angeles County Health Department, succeeding the late Dr. John Pomeroy. Dr. Halverson topped the list of seven applicants for the position with a grade of 92.28 in the civil service examination. Dr. Halverson in 1929 graduated at the College of Medical Evangelists, Loma Linda, where he is now professor of public health and preventive medicine.

University News.—Charles Edward A. Winslow, C.P.H., Anna M. R. Lauder professor of public health, Yale University School of Medicine, New Haven, has been appointed Rosenberg lecturer in the public social services at the University of California, Berkeley, for the fall semester for 1941. The lectureship was established two years ago by the Rosenberg Foundation of San Francisco for the purpose of bringing to the university for one semester at a time authorities on the public social services.

Examination for Director of County Tuberculosis Sanatorium.—An open competitive examination for medical director of Olive View Sanatorium, in the foothills of the San Fernando Valley near Los Angeles, has been announced by the Los Angeles County Civil Service Commission. Applications must be filed with the commission by October 15. The salary is \$500 a month and the usual three year county residence requirement has been waived, permitting all qualified men who are United States citizens to participate in the examination. Applicants must be male between the ages of 35 and 55, graduates of an approved medical school and have had at least five years' experience, three or more of which must have been in a responsible administrative and executive capacity in a sanatorium or hospital. Address the Civil Service Commission, Room 102, County Hall of Records, Los Angeles, for additional information.

GEORGIA

Society News.—The Fulton County Medical Society was addressed in Atlanta, August 18, by Drs. Odum O. Fanning on "The Medical Profession: Past—Present—Future," and Emmett Durham Colvin, "A Comparison of Thyroid Extract and Iodine Therapy in Preventing Toxemia of Pregnancy." The society was addressed, August 4, by Drs. Henry Walker Jernigan and William R. Baker on "Local Use of Sulfonamides in Compound Fractures" and Charles E. Hall Jr., "Treatment of Anorectal Abscess." All are from Atlanta.

ILLINOIS

District Health Officers.—Dr. Walter J. Broad, who has been connected with the division of child hygiene, state department of public welfare, Springfield, has been named district health officer with headquarters in Carlinville, succeeding Dr. Robert H. Bell, Carlinville, resigned. Dr. John P. Crotty, East St. Louis, has been named district health officer with offices in Robinson. Dr. Paul G. Buss, Dwight, has been appointed district health officer with headquarters in Macomb, succeeding Dr. Simon J. Maydet, who has entered the University of Michigan for additional training in public health. Dr. Wilber J. M. Menke, Paris, has been appointed district health officer with offices in Highland, filling the vacancy that occurred when Dr. Claude Milton Eberhart resigned early this year.

Chicago

A Series of Symposiums at the University.—A series of symposiums will be held in September at the University of Chicago in celebration of the university's fiftieth anniversary. Sessions will be devoted to the following topics, among others: Life at High Altitudes and Aviation Medicine; Levels of Integration in Biological and Social Systems; Visual Mechanisms; Thoracic Diseases; Sex Hormones; Immunological Mechanisms. Special lectures will be delivered by:

Robert R. Williams, D.Sc., chemical director, Bell Telephone Laboratories of New York, The Social Implications of Vitamins.
Dr. Donald Dexter Van Slyke, Rockefeller Institute for Medical Research, New York, The Physiology of the Amino Acids.
Florence B. Seibert, Ph.D., associate professor of physiologic chemistry, Henry Phipps Institute, Philadelphia, Tuberculosis as the Chemist Sees It.
Isabel Mailand Stewart, professor of nursing education, Teachers College, Columbia University, Advancing Frontiers in Nursing Education.
Dr. Charles H. Best, professor and head of the department of physiology, University of Toronto Faculty of Medicine, The Significance of Choline as a Dietary Factor.
Dr. Ernest W. Goodpasture, professor of pathology, Vanderbilt University School of Medicine, Nashville, Virus Infection of the Mammalian Fetus.

Section N of the American Association for the Advancement of Science will offer a comprehensive symposium on aerobiology, arranged in cooperation with the committee on aerobiology of the National Research Council and presented under the joint auspices of the association and the university. On Monday afternoon, September 22, the Theobald Smith Award in Medical Sciences will be presented to Herald R. Cox, Sc.D., of the U. S. Public Health Service, Rocky Mountain Laboratory, Hamilton, Mont., at which time he will deliver an address entitled "Cultivation of Rickettsiae of the Rocky Mountain Spotted-Fever, Typhus and Q Fever Groups in the Embryonic Tissues of Developing Chicks." Irving Langmuir, LL.D., Schenectady, N. Y., president of the American Association for the Advancement of Science, will make the presentation.

LOUISIANA

Changes in Health Officers.—Dr. Benjamin O. Morrison, formerly of Crowley, has been appointed temporary director of the Red River Parish health unit, filling the vacancy that occurred when Dr. Charles W. Reid, Coushatta, was named director of the units in Madison and Tensas parishes with headquarters at Tallulah.

New Director of Preventive Medicine.—Dr. George M. Leiby, Washington, D. C., formerly director of preventive work against venereal diseases in the District of Columbia and in North Carolina, has been appointed director of the division of preventive medicine in the Louisiana State Board of Health, newspapers reported August 2. The appointment was effective immediately. Dr. Leiby graduated at Vanderbilt University School of Medicine in 1931.

MARYLAND

Personal.—Dr. Huntington Williams, health commissioner of Baltimore, went to England in July to study disaster precaution and technics of medical care after bombings. Dr. Williams was one of a group representing the Office of Civilian Defense.

Hospital Appointment.—Dr. Willard L. Quennell, superintendent of the Highland Park General Hospital, Highland Park, Mich., has been appointed director of the Union Memorial Hospital, Baltimore. He succeeds Dr. Clyde D. Frost, who died July 5. Dr. Quennell has been head of the Highland Park hospital since 1919.

MASSACHUSETTS

Fellowship in Urology Available.—The Lahey Clinic, Boston, announces that a fellowship in urology is now available. Inquiries with a brief account of training should be addressed to Dr. Earl E. Ewert, 605 Commonwealth Avenue, Boston.

District Meeting.—The Worcester North District Medical Society was addressed at the Henry Heywood Memorial Hospital, Gardner, July 23. The speakers were Drs. Elliott P. Joslin and Theodore C. Pratt, Boston, on the medical and surgical aspects of diabetes, respectively.

Course on Industrial Hygiene.—Harvard School of Public Health, Boston, announces a short course in industrial hygiene to begin September 22 and close a few days before Christmas. The course will be open to properly qualified engineers as well as to physicians. Additional information may be obtained from Philip Drinker, Ch.E., professor of industrial hygiene, Harvard School of Public Health, 55 Shattuck Street, Boston.

MICHIGAN

Alumni Reunion.—The second triennial reunion for alumni of the University of Michigan Medical School and former staff members and house officers of the University Hospital will be held in Ann Arbor, October 2-4. Alumni speakers will include:

Dr. William L. Benedict, Rochester, Minn., Diagnosis and Treatment of Glaucoma.

Detlev W. Bronk, Ph.D., New York, Physiologic Frontiers in the Medical and Social Sciences.

Dr. Charles L. Brown, Philadelphia, Clinical Aspects of Osteoporosis.

Dr. George M. Curtis, Columbus, Ohio, Determination of the Circulating Thyroid Hormone.

Dr. Joseph R. Darnall, lieutenant colonel, medical corps, U. S. Army, Office of the Surgeon General, Washington, D. C., Concerning Army Medical Service.

Dr. Harold K. Faber, San Francisco, Portals of Entry in Poliomyelitis.

Dr. Tinsley R. Harrison, Winston-Salem, N. C., Spontaneous Hypoglycemia as a Factor in the Production of Cardiovascular Symptoms.

Dr. Lyle B. Kingery, Portland, Ore., Significance of Pruritus in General Medicine.

Dr. Perrin H. Long, Baltimore, Recent Aspects of Bacterial Chemotherapy.

Dr. Robert T. Monroe, Boston, Old Age.

Dr. Walter M. Simpson, Dayton, Ohio, New Developments in the Diagnosis and Treatment of Brucellosis.

Dr. Warren T. Vaughan, Richmond, Va., The Allergic Factor in Certain Dermatoses.

Included among the faculty members who will participate are Drs. John Alexander, Carl E. Badgley, Frederick A. Collier, Charles F. McKhann, Norman F. Miller, Louis H. Newburgh, Cyrus C. Sturgis, Carl V. Weller and Udo J. Wile; Howard B. Lewis, Ph.D., and Malcolm H. Soule, Sc.D.

MINNESOTA

Rockefeller Grants to University.—A grant of \$52,000 from the Rockefeller Foundation for a cooperative program of research in biology and medicine to be conducted by the Mayo Foundation, Rochester, and the University of Minnesota, Minneapolis, has been accepted by the board of regents of the university. The gift will be used in the study of radioactive isotopes as tracers of fundamental biologic mechanisms. Under the direction of Dean John T. Tate, Ph.D., members of the staff of the university and the Mayo Foundation have conducted this research since 1937, when a grant of \$36,000 was awarded by the Rockefeller Foundation. The university also accepted a grant of \$17,000 from the Rockefeller Foundation to support research in the field of biophysics under the direction of Otto H. Schmitt, instructor in physics and biology at the University of Minnesota.

NEBRASKA

University News.—Dr. Charles W. M. Poynter, dean of the University of Nebraska College of Medicine, Omaha, and also professor and chairman of the department of anatomy, has been relieved of his duties as chairman. John S. Latta, Ph.D., professor of anatomy and secretary of the department, has been made chairman.

Personal.—Dr. William P. Wherry, Omaha, received the honorary degree of doctor of science from Wayne University, Detroit, June 12. Dr. Wherry is president of the Nebraska State Medical Association.—Dr. J. S. Butler, Superior, was guest of honor at a dinner given by the Nuckolls County Medical Society, Superior, June 4. Dr. Butler graduated from Western Reserve University School of Medicine in 1883 and has practiced in Superior since 1889.

NEW JERSEY

Gastroenterologists Open Fall Program.—The New Jersey Gastroenterological Society announces its fall public meeting, October 6, at the auditorium of the Academy of Medicine of Northern New Jersey, Camden. Dr. Isidor S. Raydin, George Leib Harrison professor of surgery, University of Pennsylvania School of Medicine, Philadelphia, will discuss "Some Problems of the Liver and Bile Ducts and Their Management." Dr. Hyman I. Goldstein, Camden, is president of the society.

Chemist Wins National Award.—Karl A. Folkers, Ph.D., assistant director of research, Merck and Company, Rahway, since 1934, has won the \$1,000 American Chemical Society Prize in Pure Chemistry for 1941 in recognition of his contributions in the field of organic chemistry, newspapers announced August 13. The presentation of the award will take place at the annual meeting of the American Chemical Society in Atlantic City, September 8-12. Dr. Folkers was born in Decatur, Ill., in 1906 and received his Ph.D. from the University of Wisconsin, Madison, in 1931.

NEW YORK

Strengthen Public Water Supplies.—At the request of Gov. Herbert H. Lehman, the New York State Conference of Mayors and Other Municipal Officials, with the assistance of the state department of health, has inaugurated a program to strengthen public water supplies to meet possible emergencies and national defense needs. A committee representing various sections of the state has been appointed to assist in directing the work and formulating plans for all activities toward its fulfillment. An advisory committee has also been named. According to *Health News*, in the interests of national defense and to provide the greatest assurance possible in each community that other sources of water supply will be instantly available in case of failure of the regular supply, effort will be made at once to have connections installed between the systems of adjoining municipalities and to have such connections and necessary equipment in readiness for immediate utilization of other approved industrial or auxiliary water sources in case of emergency.

New York City

The Academy's Graduate Fortnight.—The New York Academy of Medicine will present its annual Graduate Fortnight, October 13-24. This year's subject is "Cardiovascular Diseases Including Hypertension." Activities will consist of panel discussions on four mornings, hospital clinics in the afternoons and formal addresses in the evening. The panel discussions will be held at the following times:

Tuesday, October 14, Dr. Paul D. White, Boston, chairman: Heart Failure, Pathologic Physiology, Symptomatology and Treatment.

Friday, October 17, Dr. Robert L. Levy, New York, chairman: Diseases of the Coronary Arteries and Their Treatment.

Tuesday, October 21, Dr. Edgar V. Allen, Rochester, Minn., chairman: Peripheral Vascular Disease, Diagnosis and Treatment, including the Role of Tobacco and Alcohol.

Friday, October 24, Dr. Harry Goldblatt, Cleveland, chairman: Hypertension and the Present Status of Therapy.

The program of evening addresses will include:

Dr. Carl J. Wiggers, Cleveland, Basic Hemodynamic Principles Essential to Interpretation of Cardiovascular Disorders (the Ludwig Kast Lecture).

Dr. White, Heart Failure (the Wesley M. Carpenter Lecture).

Dr. Timothy Leary, Boston, Pathology of Arteriosclerosis, with Special Reference to Coronary Arteries.

Dr. George Morris Piersol, Philadelphia, Arteriosclerosis: Social Significance and Recent Advances in Treatment.

Dr. Isaac Starr, Philadelphia, Arrhythmias, Including Paroxysmal Tachycardia and Their Treatment.

Dr. Harold M. Marvin, New Haven, Conn., Value and Limitations of the Electrocardiogram in Medical Practice.

Dr. Edward D. Churchill, Boston, Surgery of the Heart and Large Vessels.

Dr. Donald W. Gordon Murray, Toronto, Heparin.

Dr. James C. White, Boston, Raynaud's Disease.

Dr. Newell C. Gilbert, Chicago, Influence of Extrinsic Factors on the Coronary Flow and the Clinical Course of Heart Disease.

Dr. Thomas Duckett Jones, Boston, Treatment of Heart Disease in Childhood.

Dr. Soma Weiss, Boston, Mechanism and Treatment of Pulmonary Edema.

Dr. Tinsley R. Harrison, Winston-Salem, N. C., Effects of Renal Extracts on Hypertension.

NORTH CAROLINA

Medical Library Moved.—The Buncombe County Medical Library has recently moved to larger and better quarters in the Arcade Building, Asheville. The library was organized in 1935 by a small group in the county medical society headed by Dr. Julian A. Moore, Asheville. For several years it was supported by voluntary contributions of money, books and journals. Early in 1941 it was taken over by the Buncombe County Medical Society, which voted to increase its dues so that all members could benefit from the library. At present it contains seven hundred monographs, two thousand five hundred bound volumes of journals and receives sixty-three journals on subscription and by donation.

OKLAHOMA

New Director of Laboratories.—Dr. Ferdinand R. Haller Jr., Shawnee, who recently completed a course of study at Johns Hopkins School of Hygiene and Public Health, Baltimore, has been appointed director of laboratories for the Oklahoma State Department of Health, Oklahoma City. Dr. Hassler was formerly director of the city-county health department at Shawnee. He succeeds William D. Hayes, Dr. P.H., now in charge of public health education for the state department.

Advisory Committee to Welfare Department.—A committee has been appointed by the Oklahoma State Medical Association to act in an advisory capacity to the state department of public welfare, according to the state medical journal. Members are Drs. Alfred R. Sugg, Ada, Robert M. Shepard,

Tulsa, Frank Clinton Gallaher, Shawnee, and Frederick Redding Hood and Charles R. Rountree, both of Oklahoma City. Dr. Rountree has been named chairman. A conference was held with the officials of the welfare department during the first meeting of the committee July 20. The appointment of the committee was made on the recommendation of the council of the state society, following a request by the welfare department to the society for assistance, in the form of an advisory committee, to ascertain the physical disability of the parents of the children making applications for aid from the dependent children fund.

OREGON

Society News.—The Portland Academy of Medicine will be addressed in Portland, September 2-3, by Dr. Ralph M. Waters, Madison, Wis., on "The Service of Anesthesiology in the Modern Hospital Within Operating Room" and "Service of Anesthesiology in the Modern Hospital Outside Operating Room." The program will be coordinated with the annual meeting of the state medical society.

Dr. Dillehunt Honored.—The faculty of the University of Oregon Medical School, Portland, gave a dinner, July 10, honoring Dr. Richard B. Dillehunt, dean of the school, on his thirtieth anniversary as a member of the school. A portrait, the work of Sydney Bell, Portland artist, was unveiled during the dinner. Dr. Dillehunt was born in Decatur, Ill., and graduated at Rush Medical College in 1910. He began the practice of medicine in Portland in 1911 and from 1912 to 1917 was professor of anatomy and assistant dean of the University of Oregon Medical School. He has been dean since 1920. He served during the World War. He was president of the Pacific Coast Surgical Association, 1939-1940.

PENNSYLVANIA

District Meeting.—The Fifth Councilor District of the Medical Society of the State of Pennsylvania held its annual meeting at York, August 21. The speakers included Drs. Henry M. Thomas Jr., Baltimore, on "Hypertension"; Francis F. Borzell, Philadelphia, "Rehabilitation of the Rejected," and Daniel L. Borden, Washington, D. C., "The American Medical Association on Trial." Dr. Lewis T. Buckman, Wilkes-Barre, president-elect of the state society, made an address entitled "Out of the Night." Fifty year testimonial certificates were presented to Drs. George Alvin Harter, Maytown, and Ferdinand Shoemaker, now of Kansas City, Mo.

Philadelphia

New Dean at Jefferson.—Dr. William Harvey Perkins, professor of preventive medicine, Tulane University of Louisiana School of Medicine, New Orleans, has been announced as the new dean for Jefferson Medical College, succeeding the late Dr. Henry K. Mohler. Dr. Perkins was born in Philadelphia in 1894 and graduated at Jefferson Medical College in 1917. He was a member of the American Presbyterian Mission in Siam from 1919 to 1923, a Rockefeller Foundation fellow from 1925 to 1926 and visiting professor of medicine, Chulalongkarana University, Bangkok, Siam, from 1926 to 1930, when he joined Tulane as instructor. He became professor of preventive medicine in 1932.

SOUTH CAROLINA

Annual Clinical Assembly.—The seventh annual Piedmont Post Graduate Clinical Assembly will be held at the Anderson County Hospital, Anderson, September 9-11, under the presidency of Dr. Joseph Declerd Guess, Greenville. Included among the speakers will be:

- Dr. Robert B. Greenblatt, Augusta, Ga., Endocrinology in Menstrual Disturbances.
- Dr. Franklin B. Peck, Indianapolis, Therapeutic Application of the Various Insulins.
- Dr. Frederick Fitzherbert Boyce, New Orleans, The Hepatic (Hepatorenal) Factor in Burns.
- Dr. Tinsley R. Harrison, Winston-Salem, N. C., Treatment of Cardiovascular Emergencies.
- Dr. Arthur Grollman, Winston-Salem, Some Practical Aspects of Endocrinology.
- Dr. Frank R. Wrenn, Anderson, Résumé of the State Aid Cancer Clinic at Anderson County Hospital.
- Lieut. Col. Elias E. Cooley, medical corps, U. S. Army, Medicomilitary Problems of the Moment.
- Dr. Frank P. Coleman, Columbia, Traumatic Injuries of the Chest.
- Dr. Charles W. Roberts, Atlanta, Ga., Changing Concepts in Industrial Medicine.
- Dr. John A. Kelly, New York, Carcinoma of the Uterus.
- Dr. Kenneth M. Lynch, Charleston, Pathology for Uterine Carcinoma.

Dr. H. Sheridan Baketel, Jersey City, N. J., will address one dinner session on "The Future Economic Status of the Physician" and Dr. William deB. MacNider, Chapel Hill, N. C., the banquet, on "The Sick Individual as a Biological Problem."

TENNESSEE

Personal.—Dr. James A. Price, Oakville, has resigned as medical director of the Oakville Memorial Sanatorium. He has been in charge of the city and county institution since it was opened in 1921. His successor is Dr. Felix A. Hughes Jr., Nashville.—Dr. Julian E. Williams, Kingsport, has been appointed health officer of Sullivan County during the absence of Dr. J. W. Erwin, Blountville, in military service.—Dr. William O. Baird, Henderson, has been appointed commissioner of state institutions by Governor Cooper, succeeding Mr. Andrew T. Taylor, resigned.

TEXAS

Child Guidance Clinic.—The establishment of a child guidance clinic in connection with the University of Texas School of Medicine and the John Sealy Hospital outclinic, Galveston, was discussed at a recent meeting of representatives of local agencies and psychiatrists, with Dr. Titus H. Harris, professor of neurology and psychiatry at the university school of medicine, presiding. Various phases of organization of the clinic were considered, including its functions and the need of the community.

Personal.—Dr. William C. Farmer, San Antonio, honorary life president of the Bexar County Tuberculosis Association, has been made an honorary member of the National Tuberculosis Association; he has been a member of the latter group since 1904 and a member of its board of directors for many years. He was formerly president of the Texas State Tuberculosis Association.—Dr. Edgar P. Shelton, Dripping Springs, was honored recently at a basket picnic at Camp Ben McCulloch, Driftwood, given by friends to observe his fiftieth anniversary in the practice of medicine. A purse of \$100 was presented to Dr. and Mrs. Shelton. Speakers included Senator T. H. McGregor and Judge Harry L. Graves, justice of the court of criminal appeals, Austin, with both of whom Dr. Shelton served in the state legislature; Lon A. Smith, former state senator and member of the state railroad commission, and C. E. Evans, LL.D., president of the Southwest Texas State Teachers College, San Marcos.

VIRGINIA

Faculty Changes at the Medical College of Virginia.—Promotions in the faculty of the Medical College of Virginia, Richmond, include the following:

- Dr. Webster P. Barnes, to be assistant professor of surgery.
- Dr. Guy W. Horsley, assistant professor of surgery.
- Dr. Lawther J. Whitehead, associate professor of radiology.
- Thomas D. Rowe, M.S., associate professor of pharmacy.
- Dr. Rudolph C. Thomason, assistant professor of ophthalmology.

State Program for Outpatient Care.—With the appointment of Dr. Joseph E. Barrett, Marion, as director of the program, the state hospital board has launched its long planned project of outpatient care throughout the state. As supervisor of the outpatient service, Dr. Barrett will continue the six clinics in operation in the southwestern part of the state and expand the program to other sections as physicians and social workers become available. Dr. Barrett was formerly director of the Michigan State Hospital Commission and since 1939 has been clinical director of Southwestern State Hospital, Marion.

WASHINGTON

Psychiatric Institute.—The fourth institute on postgraduate psychiatric education for state hospitals held under auspices of the American Psychiatric Association will be held at the Western State Hospital, Fort Steilacoom, September 1-13. Participating in the course, which includes lectures and clinics, are the following:

- Dr. Thomas A. C. Rennie, Baltimore, a-societe in psychiatry, Phipps Clinic, Johns Hopkins University, Baltimore.
- Dr. William Malamud, clinical director of psychiatry, Massachusetts State Hospital, Worcester.
- Dr. Franklin G. Ebaugh, director of psychiatry, Colorado Psychopathic Hospital, Denver.
- Dr. Lydia G. Giberson, psychiatrist, Metropolitan Life Insurance Company, New York.
- Drs. Frederick Lemere and Edward D. Hoedemaker, Seattle.
- Dr. John E. Raaf, Portland, Ore.
- Dr. Karl A. Menninger, Topeka, Kan.
- Dr. Walter Freeman, secretary, American Board of Psychiatry and Neurology, Washington, D. C.
- Miss Henrietta Adams, director of nursing education, University of Washington, Seattle.

WISCONSIN

Centennial Meeting of State Society.—The State Medical Society of Wisconsin will hold its one hundredth annual meeting at the Memorial Union Theater, Madison, September 10-12, under the presidency of Dr. Ralph P. Sproule, Milwaukee. The centennial dinner will be held Wednesday evening with Dr. Nathan B. Van Etten, New York, Past President of the American Medical Association, as the speaker. His subject will be "The Triumphs of Optimism." Included among the guest speakers will be:

- Dr. Adrien H. Verbrugghen, Chicago, Head Injuries.
- Dr. Fremont A. Chandler, Chicago, Fractures of the Spine.
- Dr. Morris Fishbein, Editor of THE JOURNAL, Chicago, American Medicine and the People's Health.
- Dr. Henry W. F. Woltman, Rochester, Minn., Late Neurologic Manifestations in Cases of Injury.
- Dr. Thomas K. Brown, St. Louis, Treatment of Puerperal Infections.
- Dr. Arthur H. Parmelee, Oak Park, Ill., Joint Responsibility of Obstetrics and Pediatrics in the Problems of the Newborn.
- Dr. Theodore E. Walsh, St. Louis, Nasal Therapy in Common Colds.
- Dr. Julius Lempert, New York, The Lempert Fenestration for the Restoration of Air Conduction Hearing on Otosclerosis.
- Dr. Vincent C. Johnson, Ann Arbor, Examination of the Skull by X-Ray Methods.
- Dr. Russell D. Herrold, Chicago, Chemotherapy in Urinary Infection.
- Dr. Conrad Berens, New York, Chemotherapy in Ophthalmology.
- Dr. Frank E. Burch, St. Paul, Some New Ocular Therapeutics.
- Dr. Henry F. Helmholz, Rochester, Minn., Chemotherapy with the Sulfonamide Group.
- Dr. James A. Evans, Boston, Cardiac Accidents and Their Management.
- Dr. Nathan A. Womack, St. Louis, Pathogenesis of Tumors of the Lung.
- Dr. Philip S. Hench, Rochester, Minn., Classification and Management of Rheumatoid Disease.
- Lieut. Col. Albert N. Baggs, medical reserve, National Headquarters, Selective Service System, Washington, D. C., Selective Service and the Examining Physician.
- Dr. John W. Towey, Powers, Mich., How Early Tuberculosis Can Be Detected in the Office.
- Dr. Robert I. Harris, Toronto, Canada, War Time Amputations.

At a general session Friday afternoon the Theresa Limberg Rogers Memorial Lecture will be delivered by Dr. George Wilson, Philadelphia, on "Neuropsychiatry and Some of Its Medicolegal Complications."

WYOMING

Tularemia Infection.—The plague laboratory in San Francisco proved tularemia infection in a pool of 43 fleas taken from 24 prairie dogs (*Cynomys leucurus leucurus*) in Wyoming, according to *Public Health Reports*, July 25. The prairie dogs were killed, June 14, on a ranch south of Parco, Carbon County, and infection was demonstrated in the laboratory by the injection of the fleas in guinea pigs. This is the first instance at this laboratory in which tularemia has been produced in guinea pigs by the injection of infected fleas.

New Director of Student Health.—Dr. Ray H. Ballard, director of the Cleveland County Health Department, Norman, Okla., has been appointed director of student health at the University of Wyoming, Laramie, effective August 1. Dr. Ballard graduated at the University of Oklahoma School of Medicine, Oklahoma City, in 1939. He has served as athletic director and basketball coach at Phillips University, Enid, Okla., and as athletic director and coach of all sports at Northeastern State College, Tahlequah, Okla. He also served as athletic director and instructor in physical education at Northeastern.

GENERAL

Society News.—The Aero Medical Association of the United States has changed the date of its annual meeting from August 29-31 to October 31-November 2 in Boston.

International Medical Annual—1941.—Information just received indicates that the copy of the International Medical Annual received by THE JOURNAL and listed under "Books Received" in the issue for August 2 is one of a few copies of that publication issued in advance of its general distribution. Immediately after these few copies were mailed, the British publishing plant was bombed and all the sheets of this book, as well as much printing equipment, were destroyed. It has not been found practical to reprint the book. The International Medical Annual for 1941 is not, therefore, available and will not be available. The publishers hope that next year or sooner they may be able to present another volume.

New Officers of Ear, Nose and Throat Specialists—Medal Awarded.—Dr. James G. Dwyer, New York, was chosen president-elect of the American Laryngological, Rhinological and Otolological Society at its June meeting in Los Angeles, and Dr. James A. Babbitt, Philadelphia, was installed as president. Other officers include Drs. Kenneth M. Day, Pittsburgh, treasurer, and Carlton Stewart Nash, Rochester,

N. Y., secretary. The society's medal was awarded to Dr. James Sonnett Greene, New York, for "his unselfish devotion to the alleviation of speech defects." Dr. Greene graduated at Cornell University Medical College, New York, in 1902 and founded the National Hospital for Speech Disorders in New York in 1916. He has written extensively on the correction of speech defects.

Care Urged on Twin Birth Certificates.—Supplemental instructions have been issued by the U. S. Bureau of the Census to all transcribers of birth certificates, urging extra care in copying the records of twin births. In coding every twin, the bureau must know the sex of the twin's mate and whether the mate was born alive. When this information cannot be obtained after repeated attempts, the certificate must be coded as a single birth. If only one of the twins was born alive, transcribers should write on the birth certificate "Mate stillborn, sex. . . ." The division of vital statistics is considering asking states to send in their stillbirth transcripts monthly. These transcripts are usually sent in at the end of the year, when the division lacks adequate time to check them thoroughly or send out queries.

The Poliomyelitis and Encephalitis Situation.—The senate approved, August 21, a resolution which would in effect authorize an appropriation of three million dollars for investigations into the causes of sleeping sickness. A detailed account of this bill appears in the Organization Section of this issue, page 798. On August 20 the U. S. Public Health Service stated there were 121 new cases of encephalitis in Minnesota, 340 in North Dakota, 44 in South Dakota, and 32 in Colorado. The service also reported 549 new cases of infantile paralysis in the country. Through August 16 a total of 2,823 cases of the disease had been reported throughout this year. Newspapers announced that the service does not consider the number of cases alarming, because this is the season when they normally increase. In York, Pa., college students and all persons under 21 years of age were told on August 20 that they will not be permitted to leave the city without health department permits, based on consent to a four day quarantine at destination. This measure was taken as the infantile paralysis epidemic continued to spread in the York area. Fifty-six cases were reported with 5 deaths and 10 persons in serious condition, according to the *New York Times*. Three cases were reported in Burlington County, N. J.

CANADA

Encephalitis and Poliomyelitis Continue to Spread.—The highest day's total in the outbreak of encephalitis in Manitoba was reported for August 21 with 30 new cases and 3 deaths. Newspapers reported that the new cases, which broke out in the province in July, brought the total to 149, of which 39 are in Winnipeg, while the total deaths rose to 11. There were 23 new cases of poliomyelitis, bringing the total to 591, with 133 in Winnipeg.

Mickle Award to Dr. Collip.—Dr. James B. Collip, Gilman Cheney professor of biochemistry, McGill University Faculty of Medicine, Montreal, has received the Charles Mickle Fellowship of the University of Toronto. The fellowship is awarded annually to that member of the medical profession considered by the council of the Toronto faculty of medicine to have done most during the preceding ten years to advance sound knowledge of a practical kind in medical art or science.

CORRECTION

Encephalitis in the Yakima Valley.—In the article on "Encephalitis in the Yakima Valley, Mixed St. Louis and Western Equine Types," in THE JOURNAL, July 19, on page 163, second column, twenty-one lines from the top, this sentence occurs: "This finding is similar to that pointed out by Leake, Musson and Choep⁹ and by Jones and Bozalis¹⁰ relative to the St. Louis outbreak, and interpreted by them as incriminating certain *Culex* mosquitoes." The author, Dr. William M. Hammon, writes that these references are incorrect. The references intended were to Lumsden, L. L.: Observations of the Epidemiological Features of Epidemic Encephalitis Lethargica, Curricula in Public Health, Public Health 416a, University of California (from unpublished official report), and Casey, A. E., and Broun, G. O.: Epidemiology of St. Louis Encephalitis, Science 88:450 (Nov. 11) 1938. Leake, Musson and Choep⁹ concluded that transmission was probably by contact, and the paper by Jones and Bozalis is concerning a clinical follow-up study. Dr. Lumsden pointed out the probable role which *Culex* mosquitoes played, and Casey and Broun pointed out the correlation with standing polluted water, a common breeding place for certain *Culex* mosquitoes.

Foreign Letters

LONDON

(From Our Regular Correspondent)

June 28, 1941.

Anglo-American Cooperation in Research

In the *Times* the physiologist A. V. Hill states that Dr. J. B. Conant, president of Harvard University and an eminent chemist, recently at President Roosevelt's request came here to inaugurate arrangements for collaboration between the National Defense Research Committee of the United States and corresponding British scientific organizations. These are now established, with a permanent office in the United States embassy in London and central scientific office attached to the British supply council in Washington; close liaison had previously been arranged with the National Research Council of Canada. The only urgent need is for more direct and rapid transport, either way, of men, papers and small experimental equipment. Professor Hill says that during this century the center of gravity of scientific discovery has steadily moved westward. American scientists have been singularly willing to learn the best that the rest of the world could show them and at the same time have developed a characteristic approach to science, making more use than we of the tools and resources of engineering and large scale industry.

During this century several influences have led to increased familiarity between the scientists of the two countries. First perhaps among these are the American Rhodes scholarships; then the fact that since the last war Americans have come here for their Ph.D.'s instead of going to Germany. The Rockefeller and other research fellowships have taken American graduates to Britain and British graduates to America. Friendly relations have also been established between learned bodies in the two countries. After 1933 both here and in America and regardless of political complexion, scholars and scientists were among the first to realize the nature of the Nazi menace. The earliest attack in Germany was directed against freedom of thought and the independence of science and learning. Scientists had personal knowledge of those who were persecuted.

The National Defense Research Committee was set up by President Roosevelt to correlate and support scientific research on mechanisms and devices of warfare. Medical problems were dealt with by the medical division of the National Research Council under the chairmanship of Dr. D. V. Bush and is in touch with the British Medical Research Council. Dr. J. E. Gordon, professor of preventive medicine at Harvard, is liaison officer with the ministry for a number of American medical organizations. Dr. W. A. Sawyer, head of the International Health Division of the Rockefeller Foundation, has paid us two visits. Dr. Paul Hudson, of the division, has been studying influenza here and Dr. Hugh Smith has just replaced him for the study of nutrition and epidemics. The National Defense Research Committee is providing this year for twenty-five British medical students to undergo their clinical training in American medical schools.

Professor Hill thinks that the present cooperation between Britain and America should carry over into times of peace. There were many American research workers in our laboratories before 1939 and not a few of ours in theirs. Mutual recognition of medical qualifications would facilitate medical education and progress on both sides. The problems of reconstruction are bound to be largely scientific. In these the present companionship must be maintained, for it rests not on any particular emergency but on a community of outlook, background and feeling and a common attachment to the same idea of life.

Medicinal Glycerin and the War

The war has had a considerable effect on the supply and prices of drugs. Some drugs have soared to four or five times their prewar levels, but the price of medical glycerin has remained remarkably constant. Yet during the last war the contrary was the case: glycerin prices went to great heights for the reason that it was then a much more important factor in the manufacture of explosives than it is today, when other chemicals have largely superseded it. However, economy in the use of glycerin is enjoined in order to avoid the use of cargo space and foreign currency in its importation. With this object the use of glycerin is being discouraged where it is not essential, as in the production of tooth pastes, toilet preparations and cosmetics. When glycerin is demanded for the making of medicines, any orders which appear to be excessive are considerably reduced, as suitable substitutes are available for such preparations as cough mixtures, gargles and throat pastilles.

Protection of Food from Poison Gas

Instructions for the protection of food from contamination by poison gas have been issued by the Ministry of Food. They recommend that whenever possible foodstuffs should be kept under cover and not stacked in the open. They should be given protection during handling at every point where they are normally exposed to the air, particularly those which are not in sealed containers. Tarpaulin sheets of the oil dressed type offer the best temporary protection for stocks in the open, but if they are not available screens should be improved with canvas, sacking or corrugated iron. In warehouses and other stores food which is not in sealed containers should, if possible, be stored on middle floors and away from windows, and additional cover should be given by protective sheets. Meat in cold storage is considered safe from contamination.

If food is affected by poison gas, or if there is a suspicion that it might have been, it should be examined by an authorized officer of the local authority, who will decide whether it can be decontaminated on the spot or whether it is necessary to remove it for treatment elsewhere.

The Work of Nurses in War Time

Never before in this country has the work of nurses been so important as since the outbreak of the present war. Not only are nurses in great demand for the fighting forces, but there has been spectacular advance in their work as the result of the rapid development of nursing in industry in consequence of the speeding up of the war machine. The Royal College of Nursing is the largest voluntary association of nurses and has more than thirty thousand members and a student nurses' association of nearly eight thousand members. The college specially trains nurses for work in air raid shelters and rest centers. It administers a fund of \$50,000, which has been subscribed all over the world for the relief of bombed civilian nurses, and organizes hospitality in the country for nurses needing a respite.

Slaughter on the Roads

War conditions have increased fatal automobile casualties. During May 701 people were killed—an increase of 252 over the same month last year. The figure for April was 726, so that deaths are now occurring at an annual rate of nearly 9,000. Casualties have been consistently higher since the war began. The usual explanation is that the blackout increases the danger of the roads. But during May it was not dark during normal traffic hours, and in fact only one fifth of those killed perished during the hours of darkness. Another explanation is the rashness and inexperience of military drivers. But an analysis of the returns showed that in only a small proportion of the accidents were military drivers concerned. A heavy proportion of accidents occur in children under 15 and it has been suggested that war conditions have rendered supervision of these pedestrians more difficult.

Enemy Periodicals

Through the Royal Society the Rockefeller Foundation has provided funds for a thorough survey by the Association of Special Libraries and Information Bureaus of the present position as regards enemy and enemy controlled periodicals which reflect contemporary progress in the arts and sciences. The primary object is to obtain an inventory of needs and ascertain what supplies are available through existing channels. This enterprise is an example of Anglo-American cooperation.

AUSTRALIA

(From Our Regular Correspondent)

May 1, 1941.

Old Age Pensions

For the twelve months ended June 30, 1940 the cost to the commonwealth of old age pensions was £13,615,732; the liability with regard to invalid pensions was £2,965,326, giving a grand total of £16,581,058 for old age and invalid pensions in a young country whose population is just over eight million. [The present rate of exchange of the Australian pound is \$3.23.]

During the year the number of old age pensions granted was 26,875; over 67,000 claims were rejected. On June 30, 1940 the number of old age pensions current for the whole of the commonwealth was 272,896. The total number of invalid pensions was 58,696. Of these 10,636 were granted during the year. Over 85,000 invalid pension claims were rejected. The number of old age pensioners per 10,000 of the estimated population as of June 30, 1940 was 388 and the number of invalid pensioners 84. The average fortnightly pension has risen from 19 shillings and 1 penny in 1910 (when the first payments were made) to 38 shillings and sixpence in 1940. The cost of administration of the pensions scheme was approximately £130,000 for the year.

Rheumatic Infection in Australia

In 1937 the Central Board of Health of South Australia, with the assistance of a grant from the National Health and Medical Research Council of Australia, set up an inquiry into the incidence and epidemiologic aspects of "juvenile rheumatism," the term including acute and subacute rheumatic fever, rheumatic carditis and Sydenham's chorea whether occurring in children or in adults. The recent report of the investigation shows that the ages of highest incidence of first attacks were between 5 and 12, although right up to the age of 16 the incidence of initial attacks was high. There was a negligible difference in the sex ratio. It was found that no less than 40 per cent of the younger children were discharged from the hospital with a murmur significant of valvular disease. Over the age of 12 the figure fell to 25 per cent. Cardiac damage was found to have followed acute rheumatism much more often than it did chorea and was found to be especially common in patients manifesting both conditions. Apparently the occurrence of the two manifestations of the disease in the one patient represents a more virulent or generalized infection, so that there is a greater liability to cardiac damage. In 34 per cent of patients with acute rheumatism there was some preceding upper respiratory infection, generally acute tonsillitis. It is significant that every patient who exhibited rheumatic nodules was judged to have been discharged from the hospital with cardiac damage.

An investigation of the epidemiologic problem shows that the predisposing causes are essentially the same here as elsewhere: poverty, damp living conditions and overcrowding play strong parts. Whether these conditions have a direct or only an indirect effect is of course not yet decided. But rheumatic infection is serious. Australia is fortunate in being less severely attacked than most countries; yet even here rheu-

matic infection and the associated heart disease take a dreadful toll. To cure the damaged hearts is not possible; to prevent the damage from rheumatic infection is a public health problem worthy of the best efforts.

BRAZIL

(From Our Regular Correspondent)

May 31, 1941.

Brazilian Congress of Tuberculosis

The second Brazilian Congress of Tuberculosis met at Rio de Janeiro and São Paulo in May. There were delegates from many cities of Brazil and also from Uruguay and Argentina.

Professor Sayago of Buenos Aires said that BCG vaccination is widely employed in the principal centers of Brazil, with satisfactory results.

Concerning the discovery of incipient tuberculosis when adequate treatment will return the patient to normal, many have emphasized the importance of the method called roentgen photography, which was proposed by Manoel de Abreu several years ago and is today a well known means of examination of large groups of workers, soldiers and others. This method was adopted by public health authorities in Argentina and Brazil. In a paper, Cabello Campos of São Paulo presented the results obtained at the Clemente Ferreira Institute, where about seventy thousand persons were thus examined. He said that 80 per cent of the patients whose disease is discovered by this method can recover, while only 20 per cent of those who spontaneously come to a tuberculosis clinic show any hope of improvement.

The federal government is building several hospitals, with the cooperation of private and departmental organizations. Since 1938, in São Paulo alone, two thousand, two hundred and thirty-two new beds for tuberculous patients have been constructed.

Coffee in Cases of Shock

The use of coffee by rectum in cases of shock is under experiment in many clinics. An infusion is made with 3 or 4 spoons of coffee powder in 200 cc. of warm water; when tepid, it is given by clyster to be retained by the patient. A second coffee enema can be given two hours later and repeated if necessary. Experiments with this method were done in the Butantan Institute at São Paulo. It was shown that not only caffeine but also other alkaloids are responsible for the good effects on restoration of blood pressure. Following these experiments the coffee enema is being given routinely in the Hospital de Pronto Socorro at Recife in the treatment of patients suffering from shock. The director of the institution, Prof. João Alfredo, declared his confidence in the method. The coffee enema is similarly employed in Uruguay. Prof. Carlos Stajano of Montevideo read a paper advocating the use of coffee enemas in cases of shock.

Marriages

TILDEN HENDRICKS PHIPPS JR., Hollis, Okla., to Miss Anna Dorothea Rights of Tampa, Fla., August 9.

CLAUDE ERNEST SIMONS, Wilson, N. C., to Miss Margaret Smith Moye of Goldsboro, August 5.

JUSTIN W. NEIGHBOR, Mason City, Wash., to Miss Winifred Wetherill of San Francisco, June 14.

CONRAD RAMSEY LAM, Detroit, to Miss Marian Melbourne Smith of Amenia, N. D., August 2.

JOHN A. P. MILLET to Mrs. Carmen de Gonzalo Manice, both of New York, August 7.

ROBERT COHEN, Louisville, Ky., to Miss Helen Sylvia Berk of Lafayette, Ind., August 10.

ALEXANDER R. MACKAY to Miss Marjorie Andres, both of Spokane, Wash., July 16.

WENDELL E. COVALT, Indianapolis, to Miss Ruth Pearson of Winamac, Ind., June 21.

Deaths

Lee Cone Van Wagner ☉ New Berlin, N. Y.; University of the City of New York Medical Department, 1891; past president of the Chenango County Medical Society; for many years local health officer; associate staff member of Faxton Hospital, Utica, and Chenango Memorial Hospital, Norwich; on the associate staff and member of the board of trustees of the Chase Memorial Hospital; aged 71; died, June 18, in the Mary Imogene Bassett Hospital, Cooperstown, of cerebral thrombosis.

William Thomas Burton Mitchell, Montreal, Que., Canada; University of Toronto Faculty of Medicine, 1917; associate professor of psychiatry and assistant professor of public health and preventive medicine at the McGill University Faculty of Medicine; member of the American Psychiatric Association and the American Orthopsychiatric Association; medical director of the Mental Hygiene Institute; on the staff of the Royal Victoria Hospital; aged 51; died, July 8.

Homer Carlton Seaver, Pomona, Calif.; University of California Medical School, San Francisco, 1915; formerly associate clinical professor of gynecology at the University of Southern California School of Medicine, Los Angeles; fellow of the American College of Surgeons; served during the World War; formerly on the staffs of the Good Samaritan, St. Vincent's, Cedars of Lebanon and the Los Angeles County hospitals, Los Angeles; aged 51; died, June 23.

Schuyler Colfax Graves, Pasadena, Calif.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1881; member of the House of Delegates of the American Medical Association in 1909; veteran of the Spanish-American War; in 1906 was president of the Kent County Medical Society; aged 83; died, July 14, in the Veterans Administration Facility, West Los Angeles, of cerebral hemorrhage.

John Matthew Tracy, Springfield, Mass.; Columbian University Medical Department, Washington, D. C., 1898; member of the Massachusetts Medical Society; served during the World War; lieutenant colonel in the reserve corps of the United States Army; formerly member of the school committee and city board of health; aged 72; on the staff of the Mercy Hospital, where he died, July 8.

Abner Rutherford Renninger ☉ Philadelphia; Medico-Chirurgical College of Philadelphia, 1899; on the staffs of the Eastern State Penitentiary Hospital, Joseph Price Memorial Hospital, Children's Hospital and the Coatesville (Pa.) Hospital; aged 65; died, July 28, in the Burlington County Hospital, Mount Holly, N. J., of injuries received in an automobile accident.

Robert A. Hanna ☉ Peoria, Ill.; Keokuk (Iowa) Medical College, 1894; member of the Western Surgical Association; fellow of the American College of Surgeons; for many years on the staff of the Proctor Hospital; honorary member of St. Francis and Methodist hospitals; aged 72; died, July 15, of coronary heart disease and arteriosclerosis.

Hermon Harvey Sanderson, Detroit; University of Toronto Faculty of Medicine, 1893; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; served during the World War; consulting surgeon, department of ophthalmology, Harper Hospital; aged 71; died, July 1.

Edward Everett Campbell ☉ Columbus, Ohio; Starling Medical College, Columbus, 1907; fellow of the American College of Physicians; on the staffs of the Grant and Mount Carmel hospitals; aged 57; died in July in the St. Francis Hospital of injuries received in an automobile accident following a cerebral hemorrhage.

Cleveland Reuben Duncan ☉ Yakima, Wash.; State University of Iowa College of Medicine, Iowa City, 1909; fellow of the American College of Surgeons; served during the World War; member of the draft board; aged 56; on the staff of St. Elizabeth's Hospital, where he died, July 17, of coronary thrombosis.

Ralph Edward Clogher, Utica, N. Y.; University of Pennsylvania School of Medicine, Philadelphia, 1909; member of the Medical Society of the State of New York; aged 56; on the staff of the Utica State Hospital, where he died, July 10, of embolism following a gallbladder operation.

John Henry Carman, Plainfield, N. J.; College of Physicians and Surgeons, Baltimore, 1881; member of the Medical Society of New Jersey; for many years on the staff of the Mullenberg Hospital; aged 83; died, July 4, in Rockland, Maine, of arteriosclerosis and heart disease.

Richard Levy, Jackson Heights, N. Y.; Hamburgische Universität Medizinische Fakultät, Hamburg, Germany, 1930; member of the Medical Society of the State of New York; on the staff of the Mount Sinai Hospital, New York; aged 34; died, May 20, of an overdose of a sedative.

Eugene William Rufus Williams, Celeste, Texas; Arkansas Industrial University Medical Department, Little Rock, 1899; served during the World War; past president of the Hunt County Medical Society; aged 74; died, July 7, in Dallas of carcinoma of the liver.

John F. Haines, Monroeton, Pa.; College of Physicians and Surgeons, Baltimore, 1888; member of the Medical Society of the State of Pennsylvania; aged 77; died, July 14, in the Robert Packer Hospital, Sayre, of cerebral hemorrhage, hypertension and arteriosclerosis.

Roy Carl Rehder ☉ Mansfield, Ohio; University of Nebraska College of Medicine, Omaha, 1933; city and county health officer; president elect of the Ohio Federation of Public Health Officials; aged 38; died, June 23, of injuries received in an automobile accident.

Carl Edwin Conn ☉ Los Angeles; State University of Iowa College of Medicine, Iowa City, 1895; fellow of the American College of Surgeons; on the staff of the Presbyterian Hospital-Olmstead Memorial; aged 66; died, July 6, of coronary thrombosis and arteriosclerosis.

Henry Samuel Kieser ☉ Reading, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1930; school physician; on the staff of the Homeopathic Hospital; aged 37; died, July 11, in the Shore Memorial Hospital, Somers Point, N. J., of cerebral hemorrhage.

Hannah Mayer Stone ☉ New York; New York Homeopathic Medical College and Flower Hospital, New York, 1920; medical director of the Birth Control Clinical Research Bureau for many years; co-author of "Marriage Manual"; aged 46; died, July 10.

William Le Furgey Case, New York; Cleveland Homeopathic Medical College, 1905; associate professor of ophthalmology at the New York Medical College; on the staff of the Flower and Fifth Avenue hospitals; aged 71; died, July 3, of heart disease.

Jacob Moore Frazier ☉ Belton, Texas; University of Pennsylvania School of Medicine, Philadelphia, 1879; an Affiliate Fellow of the American Medical Association; formerly college physician and professor of biology at Baylor College; aged 84; died, July 8.

William Grimes Telfair, Orange, N. J.; University of Maryland School of Medicine, Baltimore, 1882; member of the Medical Society of the State of New York; aged 83; died, July 14, of carcinoma of the sigmoid and chronic endocarditis.

John W. Duncan, Jourdan, Texas; Memphis (Tenn.) Hospital Medical College, 1894; member of the State Medical Association of Texas; past president of the Atascosa County Medical Society; aged 67; died, May 11, of cerebral hemorrhage.

Daniel Jerome Boland, Worcester, Mass.; Baltimore Medical College, 1904; served during the World War; for many years on the staff of the Veterans Administration; aged 62; died, May 27, in St. Vincent Hospital of pulmonary infarct.

Edwin Franklin Sheppard ☉ Jenkins, Ky.; University of Tennessee College of Medicine, Memphis, 1921; fellow of the American College of Surgeons; physician in charge of the Jenkins Hospital; aged 48; died, July 16, in Elkins, W. Va.

Michael Henry Chrystal ☉ Leominster, Mass.; Baltimore Medical College, 1901; for many years on the staff of the Leominster Hospital; formerly member of the school committee; aged 72; died, July 13, of cerebral hemorrhage.

Wheeler Davis, Kennett, Mo.; Beaumont Hospital Medical College, St. Louis, 1894; member of the Missouri State Medical Association; for many years health officer; aged 72; died, July 24, in the Methodist Hospital, Memphis, Tenn.

Harold Virgil Andrews ☉ Boston; Harvard Medical School, Boston, 1896; member of the New England Obstetrical and Gynecological Society; fellow of the American College of Surgeons; aged 68; died, June 9.

Frank Rolla Doll ☉ Whiting, Ind.; Rush Medical College, Chicago, 1919; fellow of the American College of Surgeons; formerly member of the board of health of Hammond; aged 50; died, July 23, of heart disease.

Cloyd Ray Byrd, Detroit; University of Michigan Medical School, Ann Arbor, 1929; formerly secretary of the medical staff of the Edyth K. Thomas Memorial Hospital; aged 41; was shot and killed, June 28.

Frank Raymond Dew ☉ Oberlin, Ohio, Ohio Medical University, Columbus, 1904, served during the World War, county health officer, at one time health officer of Belmont County, aged 63, died, July 20

Charles Seymour Lehner, Cleveland, Ohio State University College of Medicine, Columbus, 1916, served during the World War, aged 50, died, July 3, in the Veterans Administration Facility, Dayton, of pneumonia

George H. Ross ☉ Durham, N. C., University of Tennessee Medical Department, Nashville, 1899, aged 77, died, July 4, in the Watts Hospital of bronchopneumonia and hypertensive cardiovascular disease

Allis F. Hascall, New York, Woman's Medical College of the New York Infirmary for Women and Children, New York, 1879, aged 85, died, June 29, in the Post Graduate Hospital of cerebral thrombosis

John Aloysius Gilson Jr. ☉ Haddon Heights, N. J., St. Louis University School of Medicine, 1934, aged 34, pathologist on the staff of the Doctors Hospital, Philadelphia, where he died, July 14, of uremia

Frank Jacob Fox, Tujunga, Calif., Temple University School of Medicine, Philadelphia, 1922, aged 46, died, June 28, in the Veterans Administration Facility, San Fernando, of pulmonary tuberculosis

Harold Edward Kellogg ☉ Brookings S. D., Lincoln Medical College of Coe University, Lincoln, Neb., 1910, on the staff of the Brookings Municipal Hospital, aged 58, died in May of pneumonia

Clyde De Witt Frost, Baltimore, Western Reserve University School of Medicine, Cleveland, 1920, aged 49, medical director of the Union Memorial Hospital, where he died, July 5, of sarcoma of the hip

Wilson G. Dailey ☉ Millersburg, Ky., University of Louisville (Ky.) Medical Department, 1888, past president of the Bourbon County Medical Society, aged 81, died, July 3, of lymphatic leukemia

Arthur McWhitney Adams, Philadelphia, Temple University School of Medicine Philadelphia, 1911, aged 59, died, May 26, in the United States Naval Hospital of cerebral hemorrhage

Samuel Edward Courtney, Boston (licensed in Massachusetts in 1895), formerly member of the school committee, aged 75, died, June 1, in the City Hospital of carcinoma of the stomach

John Newell Cunningham, Birmingham, Ala., Vanderbilt University School of Medicine, Nashville, Tenn., 1924, member of the Medical Association of the State of Alabama, aged 43, died in July

Kenneth Grant Mahabir, Halifax, N. S., Canada, Dalhousie University Faculty of Medicine, Halifax, 1916, served during the World War, aged 41, died, May 28, in the Halifax Infirmary

Wiley Sharp Cranford Jr., Ellisville, Miss., (licensed in Mississippi in 1907), member of the school board, formerly county health officer, aged 58, died, June 22, of chronic osteomyelitis

Thomas Walter Gillespie, Victoria, Ill., Rush Medical College, Chicago, 1896, member of the House of Delegates of the American Medical Association in 1925, aged 71, died July 5

Robert E. Gray, Garden City, Kan., Rush Medical College, Chicago, 1896, member of the Kansas Medical Society, aged 79, died, June 17, of injuries received in an automobile accident

Bernard Cohen ☉ Buffalo, University of Buffalo School of Medicine, 1887, veteran of the Spanish-American War, aged 74; died, July 15, of arteriosclerosis and coronary thrombosis

William Michael Price ☉ Dabney, Ky., Eclectic Medical Institute, Cincinnati, 1895, aged 74, died, July 11, in the Good Samaritan Hospital, Lexington, of acute pancreatitis

George Perry Eldridge, Hartford Conn., Hahnemann Medical College and Hospital of Philadelphia 1903, aged 60, died, July 13, in Norwich of carcinoma of the lung

Francesco Saverio Greco, Somerville, Mass., Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1902, aged 62, died, June 15, of coronary thrombosis

John Griffin Williamson, Rhine, Ga., University of Georgia Medical Department Augusta, 1890, member of the Medical Association of Georgia, aged 76, died, June 14

Imlay Benet, Maplewood, N. J., Long Island College Hospital, Brooklyn, 1895, aged 73, died, June 26, in the Orange Memorial Hospital of acute myeloid leukemia

Paul Adie Ford, Talcott, W. Va.; Medical College of Virginia, Richmond, 1916, aged 50, died, June 28, in the Hinton (W. Va.) Hospital of perforated gastric ulcer

John Vincent Thuot, New Bedford, Mass., Laval University Faculty of Medicine, Quebec, Que., Canada, 1890, aged 75, died, June 16, of cerebral hemorrhage

Marcellus George Gorin ☉ St. Louis, Missouri Medical College, St. Louis, 1895, aged 70, died, June 27, in the Missouri Baptist Hospital of arteriosclerosis

Robert Miller, Philadelphia, Medico Chirurgical College of Philadelphia, 1902, member of the Medical Society of the State of Pennsylvania, aged 67, died, May 20

Alex Doniphan Louthan, Wylliesburg, Va., Medical College of Virginia, Richmond, 1904, aged 71, died, July 4, in the Virginia Baptist Hospital, Lynchburg

William Blaine Clark, Tulsa, Okla., Chicago Medical College, 1887, aged 85, died, July 8, of nephritis, hypertension, heart disease and arteriosclerosis

Max Benjamin Brandenberger ☉ Seguin, Texas University of Texas School of Medicine, Galveston, 1906, aged 59, died, June 27, of heart disease

Oscar Watson, Brooklyn, Columbia University College of Physicians and Surgeons, New York, 1899, aged 73, died July 10, in St. John, N. B., Canada

Joseph F. Dolamore, Galena, Ill., Rush Medical College Chicago, 1893, for many years president of the board of education, aged 70, died, July 27

George Eber Hatfield, Tustin, Calif., Rush Medical College, Chicago, 1892, aged 73, died, July 9, of injuries received in an automobile accident

Herman Reynolds, McMinnville, Tenn., University of Nashville Medical Department, 1909, aged 63, died, July 7, of coronary thrombosis

William C. Schmitz, Manitowoc, Wis., Rush Medical College, Chicago, 1886, aged 79, died, July 10, of chronic myocarditis and nephritis

Walter Estus Deuel Jr., Penns Grove, N. J., New York Medical College and Flower Hospital, New York, 1908, aged 62, died, July 18

Emile Connie Underburg, Alpine, Calif., College of Physicians and Surgeons, Keokuk, Iowa, 1890, aged 77, died, June 2 of heart disease

Jesse M. Solomon, Newbury, Vt., (licensed in Vermont) aged 63, died, July 18, of cerebral hemorrhage and arteriosclerosis

Elliot Arnold Reed, Artesia, Calif., Baltimore University School of Medicine, 1897, aged 75, died, July 4, of heart disease

Walter Ives Budington ☉ Newark, N. J., University of Vermont College of Medicine, Burlington, 1908, aged 56, died July 4

David R. Carden, Huntington, W. Va., Kentucky School of Medicine, Louisville, 1898, aged 72, died, July 6, of pneumonia

Robert B. Scott, Louisville, Ky., Meharry Medical College Nashville, Tenn., 1902, aged 70, died July 2, of arteriosclerosis

Isabel A. Church, Yorktown Heights, N. Y., University of Buffalo School of Medicine, 1893, aged 80, died, June 17

Robert George Jackson, Toronto, Ont., Canada, Jefferson Medical College of Philadelphia, 1905, aged 83, died, July 12

Emily Graham Harrison, Los Gatos, Calif., Cooper Medical College, San Francisco, 1895, aged 76, died, June 22

Walter H. Graves, Wichita, Kan., Chicago Medical College, 1883, aged 88, died, June 14, of arteriosclerosis

Thomas Francis Conroy Sr., Palo Alto Calif., Rush Medical College, Chicago, 1896, aged 76, died, July 6

Fred Marcy Richmond, Hartland Vt., (licensed in Massachusetts in 1904), aged 63, died, July 8, in Windor

Annie B. Wightman, Napa, Calif., Hahnemann Medical College, San Francisco, 1885, aged 80, died, July 5

William Warner Hubbard, Pomona, Calif., Harvard Medical School, Boston, 1869, aged 91, died, June 25

Luther Benjamin Cook, Coolidge, Ga.; Hospital Medical College, Atlanta, 1910; aged 61, died, June 24

Samuel H. Sibert ☉ Wapaltoneta, Ohio (licensed in Ohio in 1896), aged 83, died, June 14, of myocarditis

John W. Wirt, Johnstown, Pa., Columbus Medical College, 1892, aged 80, died, July 15

Bureau of Investigation

COSMIC RAYS AND A CALIFORNIA WIZARD

Treatment from the Higher Powers by Radio When Patient Is Tuned in with a Cosmic Generator

In June 1939 a physician in Aurora, Ill., forwarded to the American Medical Association some of the advertising used by W. H. Neher. The Bureau of Investigation at once addressed the Board of Medical Examiners of California, referring the advertising to their attention and stating that the novel idea of collecting a fee for treatment by radio and having the patient continue to pay for it as long as he wants it presupposes a gullibility that it may be hoped does not exist to any extent. The advertising had actually stated the following: "It is not necessary that any one should come to this office or have any acquaintance with its management. Do not send money to have your friends tuned in if you do not have their consent. We must have their full name and address, and to make the identification certain, give the name of the mother and enclose the tuning-in fee and at least one month's rental."

The California Board immediately instituted an investigation of the outfit in La Verne which was exploiting the "Cosmic Rectifier."

According to a report by the Board, one woman who had received diagnosis and treatment by Neher gave the following experiences: He requested her to write her name in full on a piece of paper with a lead pencil. This he placed on a metal plate and manipulated some dials on what appeared to be a large electrical apparatus with a series of numbers therein. She was then given a chart which indicated by pencil marks the various things from which she suffered, but at this point Neher varied his procedure from that of others who employ similar machines and told the patient that she was "tuned in" on what he called "universal intelligence" and that she would receive treatment by this means as long as she continued to pay \$1 a month for this service. Shortly before the first month had passed, the patient remitted to Neher the required \$1 and received a letter from him stating that she was receiving a fine amount of energy, that she was almost 100 per cent, and that in many points she had made a splendid gain.

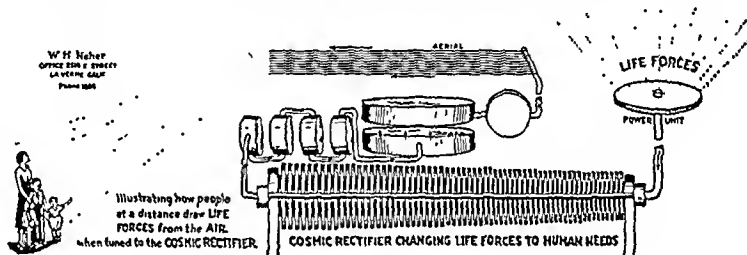
Shortly after this report was made a complaint was filed in the city court of La Verne, charging Neher with violation of Section 2141 of the Business and Professions Code. A warrant was issued and the bail was fixed at \$500. The defendant was arrested and arraigned and entered a plea of not guilty, and the case was set for trial. This case was subsequently dismissed for the purpose of filing a new complaint on other evidence. In the meantime the investigation continued, and evidence was brought to light that Neher was claiming that he could cure cancer, tumors, tuberculosis and other conditions by his system of radio wave treatments by simply "tuning in" a particular patient many miles away on his "Radio Rectifier." Subsequently Neher was found guilty of three of the six counts charged for asserted violation of the Business and Professions Code. He was sentenced to pay a fine of \$600 or to spend forty days in the county jail. He paid the fine and the verdict was appealed. Nothing further developed in connection with this case in California.

During the latter part of June 1941 the Post Office Department at Washington issued a fraud order against W. H. Neher and the Private Laboratory of W. H. Neher and their officers and agents as such, at La Verne, Calif. The evidence in this order showed that Neher was a retired farmer, aged 69, possessing a high school education. The so-called laboratory was in a remodeled garage adjacent to his home. The enterprise was launched by Neher in the early part of 1938. An illustration depicting this procedure in Neher's promotional

material is reproduced herewith. Neher claimed to have discovered his cosmic machine in 1932 as a result of research and reading of books on cosmic rays.

The charges alleged in substance that the respondents were engaged in obtaining remittances through the mails for so-called tuning-in and rental fees by means of false and fraudulent pretenses, representations and promises contained in written and printed matter sent through the mails to the effect that by placing "tuning-in" cards filled out by remitters in a so-called cosmic generator maintained in his "laboratory" Neher brings the bodies of said remitters into harmony with cosmic forces and thereby reduces the cause of and cures 99 per cent of every form of disease or ailment and, further, that these results will be accomplished regardless of the distance of the remitter from the said so-called cosmic generator.

According to the fraud order, Neher's claims were to the effect that he had discovered cosmic harmony through perfection of an alloy of aluminum which controlled and entrapped the vibratory forces of the body and in return, through the ether waves, treated the persons regardless of the distance they were from his laboratory. According to him, the theory was that there are twenty-eight rays which the human body is able to absorb through cosmic rays and that for each one of these rays there was a prayer and that each prayer was copied seven times. He claimed that the cosmic ray passed through the prayer cards on which the names of the persons applying for treatment were written, then through the prayers to the twenty-eight spindles, which again absorbed the cosmic rays, making a clear field



Reproduction of illustration from Neher's advertising.

from the prayers through the cards to the spindles. In making the spindles of aluminum alloy, a prayer and a number were inserted in the mold and then the hot aluminum metal poured therein, so that if it was prayer 1 or prayer 3 that spindle would be 1 and 3 and could not be any other prayer and could not be any other designated spindle. The device used by Neher for determining the progress of the person being treated was an instrument to which a string could be attached and swung on one's thumb. If it swung to the right it meant one thing, and if it swung to the left it meant another. It was on the basis of this apparatus that he was supposed to be able to determine the progress of any persons who asked or inquired as to how they were progressing with the treatment.

In a brief filed on behalf of the respondents it is contended that there was no showing of fraudulent intent on the part of Neher and that, therefore, the Postmaster General was without authority to issue a fraud order against him. It was pointed out, however, by the acting solicitor, Hon. W. E. Kelly, that the fraud order statutes are to protect the public and purge the mails of objectionable matter regardless of whether or not persons obtaining money through misrepresentation have personal knowledge of the falsity of their standards. It was further contended that the statements made by Neher in obtaining remittances through the mails were mere expressions of opinions and not actual representations of fact. The solicitor pointed out, however, that in the light of the claims made in the circular matter this contention is also without weight.

The respondents further contended that the results promised are sought to be accomplished by prayer and divine intervention, but Neher's own circular matter indicates that the alleged intervention of the Almighty for the accomplishment of the cures promised is dependent on the creation of a cosmic field for

"focalizing" cosmic rays "into the space between the discs" of his so-called generator. The testimony showed naturally that neither the "cosmic generator" nor any other machine known to science will create a cosmic field or change the direction of the cosmic rays. It was further noted that Neher's early promotional material made no mention of the Almighty or of prayer and that at the time of the first investigation he made no claim that the results were obtained through prayer or divine healing alone.

The respondents claimed that the evidence produced by the government consisted of mere opinion, but the evidence was shown to be based on well established scientific fact, and finally the testimony of Dr. Fred W. Norris, senior medical officer, Food and Drug Administration, Federal Security Agency, revealed that, in his own experience, divers persons suffering from cancer and other disorders who had believed themselves benefited by various forms of mental and religious treatment were found at autopsy not to have been in any way improved thereby. It was therefore recommended that a fraud order be issued, and said order was signed by the acting Postmaster General June 28, 1941.

Correspondence

ENCEPHALITIS IN THE YAKIMA VALLEY

To the Editor:—We would like to take exception to the statement made by Dr. W. W. Hammon (Encephalitis in the Yakima Valley, *THE JOURNAL*, July 19, p. 161) to the effect that we had recommended that physicians use hyperimmune rabbit serum in the treatment of Western equine encephalomyelitis in man. Actually our report in *THE JOURNAL*, Sept. 28, 1940, was a factual account of the results of treating the experimental disease in mice and guinea pigs with specific hyperimmune rabbit serum. The purpose of our investigations was to determine whether a virus disease could be treated with serum after the onset of symptoms. We did not recommend or even imply that our serum be used in treatment of the disease in man.

Other statements in the article made by Dr. Hammon are open to question. The first of these is that serum treatment in man would not be feasible because the dose of serum needed in man, based on that used by us in guinea pigs, would require that several liters be administered. Dr. Hammon assumes that the guinea pig data can be transferred directly to man, obviously a dangerous and unjustified assumption. Furthermore, he overlooks the fact that we used unrefined rabbit serum. It would be a simple matter to obtain several fold concentration of the antibodies, even assuming that the potency of the serum could not be increased by improvements in technic. One has only to recall the fact that serum therapy of pneumonia originally required enormous doses of serum in terms of cubic centimeters, whereas modern therapy enables the patient to receive larger doses of antibodies in very small volume.

Dr. Hammon also fails to show an appreciation of the quantitative aspect of serum therapy when he concludes that "the administration of additional serum could be expected to be of little or no value" because antibodies were found in the blood of many patients at a time when a clinical diagnosis was made. There is no indication whatever in his data that the concentration of antibodies in these patients was at all comparable to that present in the blood of animals successfully treated with serum of high potency, such as was used in our experiments. Following his line of reasoning, antitoxin therapy of diphtheria is useless because Underwood (*Lancet* 1:364 [Feb. 16] 1935) has shown that in all 8 cases of diphtheria studied by him at the onset showed amounts of antitoxin in the blood ranging up to $\frac{1}{2}$ unit or higher per cubic centimeter. Yet

those patients having even as much as $\frac{1}{50}$ of a unit per cubic centimeter required the administration of antitoxin, 1 receiving 70,000 units.

The disadvantages of the early use of large amounts of heterologous serum so graphically portrayed by Dr. Hammon are, we believe, more imaginary than real. We are aware of the so-called adjuvant action of serum and would be cautious in using a truly heterologous serum. However, we must again call attention to the fact that we made no recommendation on using even a homologous serum. Since Dr. Hammon's own work brings out the apparently close relationship between encephalitis due to the Western equine encephalomyelitis and St. Louis viruses, it would seem feasible to attempt to develop a polyvalent serum against encephalitis due to these viruses.

In regard to Dr. Hammon's contention that Miss Howitt demonstrated as early as 1932 that horse and rabbit serum was effective in the treatment of the Western equine disease if given early enough but was ineffective when administered later, we feel that Miss Howitt did not conduct therapeutic studies in the usual sense of that term or in the manner in which we conducted our work, since she administered serum during periods ranging from twenty-four hours before injection of the virus to forty-eight hours after, at which time apparently the animals were still well, according to her description: "The temperature in guinea pigs is usually normal for the first day after inoculation, rising slightly on the second or third day, reaching a maximum by the end of the third or beginning of the fourth day and then dropping as the symptoms develop and the animal finally becomes prostrate. Death occurs usually on the fourth to the sixth day." The use of serum under the conditions cited by Miss Howitt would seem to us to be prophylaxis rather than therapy. Nevertheless, it is of interest to note that even with 3 cc. injections of rabbit serum intramuscularly (compared with from 20 to 50 cc. intraperitoneally in divided doses in our experiment) protection could be obtained in Miss Howitt's experiments against virus given intracerebrally four hours after inoculation with virus and in those given virus by intranasal instillation forty-eight hours after virus administration.

We would like to add that we were unaware of Miss Howitt's work when our studies were published, since her paper in the *Journal of Infectious Diseases* (51:493 [Nov.-Dec.] 1932) was published under the title "Equine Encephalomyelitis," with the subtitle "Recovery of the Virus of Equine Encephalomyelitis from the Blood of Experimentally Infected Animals." Obviously in our search of the literature we could see no indication from this title that the paper dealt with serum therapy. When Miss Howitt called our attention to her paper, we wrote her immediately, apologizing for not referring to it and indicating our intention of doing so in future publications.

H. J. SHAUGHNESSY, PH.D.
JOSEPH ZICHIS, PH.D.

Chief, Division of Laboratories, and Research Biochemist
and Bacteriologist, respectively, State of Illinois, Department of Public Health.

1800 West Fillmore Street, Chicago.

SENSITIVITY IN DICTION

To the Editor:—I wish to enter what is no doubt a pedantic but nevertheless deeply sincere protest against the growing use in medical literature of the revolting term "goose pimples" or "goose bumps" instead of the proper expression, "goose flesh."

ROBERT W. BUCK, M.D., Boston.

Medical Examinations and Licensure**COMING EXAMINATIONS AND MEETINGS****ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE**

CHICAGO, Feb 16 17, 1942 Council on Medical Education and Hospitals Sec, Dr William D Cutter, 535 North Dearborn Street, Chicago

**NATIONAL BOARD OF MEDICAL EXAMINERS
EXAMINING BOARDS IN SPECIALTIES**

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, August 23 page 637

BOARDS OF MEDICAL EXAMINERS

ALABAMA* Montgomery, June 16 18 Sec, Dr J N Baker, 519 Dexter Ave, Montgomery
ARKANSAS * Medical Little Rock, Nov 6 7 Sec Dr D L Owens Harrison Electric Little Rock, Nov 6 Sec, Dr Clarence H Young 1415 Main St, Little Rock

CALIFORNIA Oral examination (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), San Francisco Oct 1 Written Sacramento Oct 20 23 Sec, Dr Charles B Pinkham, 1020 N St, Sacramento

COLORADO * Examination Denver Oct 7 *Endorsement Denver, Oct 8 10 Sec Dr George R Buck 831 Republic Bldg, Denver

CONNECTICUT Medical Examination Hartford Nov 11 12 Endorsement Hartford Nov 25 Sec, Dr Creighton Barker, 258 Church St, New Haven Homocopathic Derby, Nov 11 12 Sec, Dr Joseph H Evans, 1488 Chapel St, New Haven

DELAWARE Dover, July 14 16 Sec Medical Council of Delaware, Dr Joseph S McDaniel, 229 S State St, Dover

DISTRICT OF COLUMBIA * Washington Nov 10 11 Sec, Dr George C Ruhland 6150 East Municipal Bldg, Washington

FLORIDA * Jacksonville, Nov 24 25 Sec, Dr William M Rowlett Box 786, Tampa

GEORGIA Atlanta Oct 14 15 Sec State Examining Boards, Mr R C Coleman 111 State Capitol, Atlanta

IDAHOO Boise Oct 7 Dir, Bureau of Occupational License, Mr Walter Curtis, 355 State Capitol Bldg, Boise

ILLINOIS Chicago, Oct 14 16 Supt of Registration, Mr Lucien A Tide, Department of Registration and Education, Springfield

INDIANA Indianapolis June 16 18 Sec Board of Registration and Examination, Dr J W Bowers, 301 State House, Indianapolis

KANSAS Kansas City, Sept 23 24 Sec Board of Medical Registration and Examination, Dr J F Haggis, 905 N 7th St, Kansas City

KENTUCKY Louisville, Dec 8 10 Sec, Dr A T McCormack, 620 S Third St, Louisville

MAINE Portland Nov 12 13 Sec, Board of Registration of Medicine Dr Adam P Leighton 129 State St, Portland

MARYLAND Medical Baltimore Dec 9 12 Sec Dr John T O'Mara 1215 Cathedral St, Baltimore Homocopathic Baltimore, Dec 9 10 Sec, Dr John A Evans, 612 W 40th St, Baltimore

MASSACHUSETTS Boston Nov 4 7 Sec, Board of Registration in Medicine, Dr Stephen Rushmore, 413 T State House Boston

MICHIGAN * Lansing Oct 15 17 Sec, Board of Registration in Medicine Dr J Earl McIntyre 203 Hollister Bldg, Lansing

MINNESOTA * Minneapolis, Oct 21 23 Sec, Dr J F Du Bois, 230 Lowry Medical Arts Bldg, St Paul

MISSISSIPPI Reciprocity Jackson December Asst Sec, State Board of Health Dr R N Whitfield, Jackson

MISSOURI Kansas City, Oct 29 31 Sec, State Board of Health, Dr James Stewart, State Capitol Bldg, Jefferson City

MONTANA Helena, Oct 6 8 Sec, Dr Otto G Klein, First National Bank Bldg, Helena

NEW HAMPSHIRE Concord, Sept 11 12 Sec, Board of Registration in Medicine, Dr T P Burroughs State House, Concord

NEW JERSEY Trenton, Oct 21 22 Sec, Dr E S Hallinger, 28 W State St, Trenton

NEW MEXICO Santa Fe, Oct 13 14 Sec, Dr Le Grand Ward, 135 Sena Plaza Santa Fe

NEW YORK Albany, Buffalo New York and Syracuse, Sept 15 18 Chief, Bureau of Professional Examinations Mr Herbert J Hamilton, State Education Department, 315 Education Bldg, Albany

NORTH CAROLINA Endorsement December Sec, Dr W D James, Hamlet

NORTH DAKOTA Grand Forks, Jan 6 9 Sec, Dr G M Williamson, 4½ S Third St, Grand Forks

OKLAHOMA * Reciprocity Oklahoma City, Dec 10 Sec, Dr James D Osborn, Jr, Frederick

PENNSYLVANIA Philadelphia January Acting Sec, Bureau of Professional Licensing, Mrs Marguerite G Steiner 358 Education Bldg, Harrisburg

RHODE ISLAND * Providence Oct 23 Sec Division of Examiners, Dr Robert M Lord, 366 State Office Bldg, Providence

SOUTH DAKOTA * Pierre, Jan 13 14 Dir, Medical Licensure, Dr J F D Cook, State Board of Health Pierre

TEXAS Austin, Nov 17 19 Sec, Dr T J Crowe 918 Texas Bank Bldg, Dallas

VERMONT Burlington, Feb 10 12 Sec, Board of Medical Registration Dr T J Triviss Richford

VIRGINIA Richmond Dec 9 12 Sec Dr J W Preston, 30½ Franklin Road, Roanoke

WEST VIRGINIA Charleston Nov 17 19 Sec, Public Health Council, Dr C F McClintic, State Capitol Charleston

WISCONSIN * Madison Jan 13 15 Sec, Dr H W Shutter, 425 E Wisconsin Ave, Milwaukee

WYOMING Cheyenne Oct 6 7 Sec Dr M C Keith, State Capitol Bldg, Cheyenne

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA Tucson Sept 16 Sec, Mr Franklin E Roach, Science Hall University of Arizona Tucson

COLORADO Denver, Sept 10 11 Sec, Dr Esther B Starks, 1459 Ogden St, Denver

CONNECTICUT Oct 11 Address State Board of Healing Arts 1945 Yale Station, New Haven

DISTRICT OF COLUMBIA Washington Oct 20 21 Sec Dr George C Ruhland, 6150 East Municipal Bldg, Washington

FLORIDA DeLand Nov 1 Final date for filing application is Oct 17 Sec, Professor J T Conn, John B Stetson University, DeLand

IOWA Des Moines Oct 14 Dir, Division of Licensure and Registration Mr H W Grete, Capitol Bldg, Des Moines

MINNESOTA Minneapolis Oct 7 8 Sec, Dr J C McKinley, 126 Millard Hall University of Minnesota Minneapolis

NEBRASKA * Lincoln, Oct 7 8 Dir, Bureau of Examining Boards, Mrs Jeannette Crawford 1009 State Capitol Bldg, Lincoln

OREGON Portland Nov 1 Final date for filing application is Oct 15 Sec State Board of Higher Education, Mr Charles D Byrne, University of Oregon Eugene

RHODE ISLAND Providence Nov 19 Chief Division of Examiners, Mr Thomas B Casey 166 State Office Bldg, Providence

SOUTH DAKOTA Aberdeen, Dec 5 6 Dr G M Evans, Yankton

WISCONSIN Madison Sept 20 Sec, Professor Robert N Bruer, 3414 W Wisconsin Ave, Milwaukee

Connecticut March Report

The Connecticut Medical Examining Board reports the written examination for medical licensure held at Hartford, March 11-12, 1941 The examination covered 9 subjects and included 70 questions An average of 75 per cent was required to pass Thirty-six candidates were examined, 17 of whom passed and 19 failed The following schools were represented

School	PASSED	Year Grad	Per Cent
Yale University School of Medicine	(1938) 75 1,	(1940)	78 9*
Iosola University School of Medicine		(1940)	76 8
Northwestern University Medical School		(1940)	79†
University of Michigan Medical School		(1940)	78
Columbia University College of Physicians and Surgeons		(1938)	77*
Long Island College of Medicine		(1939)	79 3
New York Medical College, Flower and Fifth Avenue Hospitals		(1939)	79 9
Jefferson Medical College of Philadelphia		(1938)	75 1
University of Tennessee College of Medicine		(1939)	77 1
Medizinische Fakultät der Universität Wien		(1936)	76 4,*
(1937) 76 9, (1938) 75 8			
Albert Ludwigs Universität Medizinische Fakultät Freiburg		(1937)	78 3
Friedrich Wilhelms Universität Medizinische Fakultät, Berlin		(1926)	75 5*
Johann Wolfgang Goethe Universität Medizinische Fakultät, Frankfurt am Main		(1933)	80 2
Universität Heidelberg Medizinische Fakultät		(1927)	79 2*

School	FAILED	Year Grad	Number Failed
Harvard Medical School		(1935)	1
Mariquette University School of Medicine		(1940)	1
Medizinische Fakultät der Universität Wien		(1930), (1936), (1937), (1938), 2	5
Ludwig Maximilians Universität Medizinische Fakultät München		(1920), (1925)	2
Universität Heidelberg Medizinische Fakultät		(1920), (1922)	2
Magyar Királyi Pazmany Petrus Tudományegyetem Orvosi Fakultása, Budapest		(1938)	1
Regia Università degli Studi di Bologna Facoltà di Medicina e Chirurgia		(1937)	1
Regia Università degli Studi di Roma Facoltà di Medicina e Chirurgia		(1937)	1
Regia Università di Napoli Facoltà di Medicina e Chirurgia		(1936), (1938)	2
Universität Bern Medizinische Fakultät		(1937)	1
Université de Genève Faculté de Médecine		(1935)	1
Osteopath†			1

Fifteen physicians were successful in the oral examination held for endorsement applicants at Hartford, March 25 The following schools were represented

School	PASSED	Year Endorsement of
University of Alabama School of Medicine		(1920)* Alabama
Yale University School of Medicine		* N B M Ex
Northwestern University		* N B M Ex
State University of Iowa		* N B M Ex
Johns Hopkins Univ Sch		* N B M Ex
University of Maryland		* N B M Ex
College of Physicians and Surgeons		(1937)* Maryland
Tufts College Medical School (1932) Maine		(1939)* N B M Ex
New York Medical College, Flower and Fifth Avenue Hospitals		(1939)* N B M Ex
Western Reserve University School of Medicine		(1933)* Ohio
Temple University School of Medicine		(1936)* New Jersey
University of Vermont College of Medicine		(1939)* N B M Ex
McGill University Faculty of Medicine		(1931)* New Jersey

* Licenses have not been issued

† This applicant has received the M B degree and will receive the M D degree on completion of internship

‡ Examined in medicine only

* Basic Science Certificate required

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Privileged Communications: Authorization for Attending Physician to Disclose Information to Insurer Not Authorization to Testify in Court Proceedings.—The defendant insurance company issued a policy of life insurance to Noble based on an application signed by him Aug. 26, 1936. The application, which the insured signed without reading and without completing, authorized any physician who attended him to disclose to the insurer any information thus acquired and stated that he was in good health at that time and had not consulted a physician in the past ten years. As a matter of fact, when Noble signed the application he was not feeling well, had been treated by physicians during the preceding two months and so informed the insurance agent who solicited his application. The insurance agent, however, told Noble that those facts "made no difference" and instructed him to sign the application, informing him that he, the insurance agent, would complete it. In November 1936 Noble learned that he was suffering from "tuberculosis of the throat," from which ailment he died in March 1937. The insurance company then rescinded the policy and, on the ground that the disease from which the insured died antedated the issuance of the policy, returned to his widow the premiums paid on the policy. In a suit on the policy the widow recovered judgment and the insurance company appealed to the Supreme Court of Iowa.

The trial court refused to receive the testimony of Noble's attending physician that Noble was afflicted with tuberculous laryngitis when the application was made in August 1936 on the ground that the testimony was a privileged communication under Section 11263, Iowa Code, the material part of which reads, as follows:

No . . . physician . . . who obtains such information by reason of his employment . . . shall be allowed, in giving testimony, to disclose any confidential communication properly intrusted to him in his professional capacity, and necessary and proper to enable him to discharge the functions of his office according to the usual course of practice or discipline. Such prohibition shall not apply to cases where the party in whose favor the same is made waives the rights conferred.

The insurer contended that the provision in the application that authorized any physician who attended the applicant to disclose to the insurer any information thus acquired authorized the attending physician to reveal information so obtained in a court of law. The statute just referred to, said the Supreme Court of Iowa, does not prohibit a physician from disclosing any confidential communications. It merely prohibits him from giving testimony. The court then adverted to *Moutzoukos v. Mutual Benefit Health & Accident Ass'n*, 69 Utah 309, 254 P. 1005, in which case the insured had answered "yes" to the following question in an application: "Do you agree that any physician who has ever treated you may give information within his knowledge as to your past or present physical condition?" The Utah court held that this did not permit an attending physician to testify in court, saying:

The plaintiff's willingness to allow any physician that had ever treated him to give information within his knowledge as to plaintiff's past or present physical condition should not be construed as a consent that said physicians might testify to such information against the plaintiff in an action to recover on the policy. Such an interpretation of the language used would violate the rule that doubtful provisions should be construed in favor of the insured.

Here, continued the Supreme Court of Iowa, the insurance policy was drafted by the insurance company, and, under well known principles of law, any doubtful provisions in the contract should be strictly construed against the company. A reading of the policy and application indicates that the purpose of the statement in question was to permit the insurance company to question physicians of the insured relative to his health before assuming the risk. The consent of Noble that his physician reveal his condition to the insurance company does not in any way refer to the statute granting the privilege because the statute relates only to the giving of testimony. Therefore the statute was not waived either directly or by implication.

The insurance company in support of its contention relied on *Luce v. Service Insurance Company*, 227 Iowa 532, 288 N. W. 681, in which case an insured had signed an application providing that "All provisions of law forbidding any physician or other person who attended the deceased from disclosing any knowledge or information acquired by him are hereby waived and such physician is hereby authorized to make such disclosure." But the Iowa privileged communication law, answered the court, prohibits the giving of testimony. The waiver involved in the Luce case expressly authorized the physician to testify by waiving the statute. Medical ethics prohibit a physician from disclosing to any one a confidential communication revealed to him by his patient, but the statute in question does not, as it simply prohibits the attending physician from testifying in a proceeding in which the witness is under oath. Clearly the physician's statement to the insurance company would not be testimony, and the physician would have the legal right to make a disclosure under such circumstances without the consent of the insured. An authorization such as contained in the application here involved simply releases the attending physician from his ethical obligation to tell no one. The court accordingly concluded that the trial court was correct in refusing to admit the testimony of the attending physician. However, for reasons not here material, the judgment in favor of the widow was reversed.—*Noble v. United Ben. Life Ins. Co.*, 297 N. W. 881 (Iowa, 1941).

Society Proceedings

COMING MEETINGS

- American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 19-23. Dr. William P. Wherry, 107 South 17th St., Omaha, Executive Secretary.
- American Academy of Pediatrics, Boston, Oct. 8-11. Dr. Clifford G. Grulee, 636 Church St., Evanston, Ill., Secretary.
- American Association for the Study of Neoplastic Diseases, Washington, D. C., Sept. 4-6. Dr. Eugene R. Whitmore, 2139 Wyoming Ave. N.W., Washington, D. C., Secretary.
- American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va., Sept. 11-13. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.
- American Association of Railway Surgeons, Chicago, Sept. 8-10. Dr. Daniel B. Moss, 547 West Jackson Blvd., Chicago, Secretary.
- American Clinical and Climatological Association, Skytop, Pa., Oct. 16-18. Dr. Francis M. Rackemann, 263 Beacon St., Boston, Secretary.
- American Congress of Physical Therapy, Washington, D. C., Sept. 1-3. Dr. Richard Kovacs, 2 East 88th St., New York, Secretary.
- American Hospital Association, Atlantic City, N. J., Sept. 15-19. Dr. Bert W. Caldwell, 18 East Division St., Chicago, Executive Secretary.
- American Public Health Association, Atlantic City, N. J., Oct. 14-17. Dr. Reginald M. Atwater, 50 West 50th St., New York, Executive Secretary.
- American Roentgen Ray Society, Cincinnati, Sept. 23-26. Dr. Carleton B. Peirce, Royal Victoria Hospital, Montreal, Canada, Secretary.
- Central Association of Obstetricians and Gynecologists, New Orleans, Oct. 2-4. Dr. William F. Mengert, 515 Newton Road, Iowa City, Secretary.
- Clinical Orthopaedic Society, Cleveland and Akron, Ohio, Oct. 3-4. Dr. Myron O. Henry, 825 Nicollet Ave., Minneapolis, Secretary.
- Colorado State Medical Society, Estes Park, Sept. 17-20. Mr. Harvey T. Setlman, 537 Republic Bldg., Denver, Executive Secretary.
- Delaware Medical Society of, Wilmington, Oct. 7-8. Dr. C. L. Munson, 1015 Washington St., Wilmington, Secretary.
- District of Columbia Medical Society of the, Washington, Sept. 30-Oct. 2. Mr. Theodore Wiprud, 1718 M Street N.W., Washington, Secretary.
- Indiana State Medical Association, Indianapolis, Sept. 23-25. Mr. Thomas A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.
- Kentucky State Medical Association, Louisville, Sept. 29-Oct. 3. Dr. Arthur T. McCormack, 620 South Third St., Louisville, Secretary.
- Michigan State Medical Society, Grand Rapids, Sept. 16-18. Dr. L. Fernald Foster, 2020 Olds Tower, Lansing, Secretary.
- Mississippi Valley Medical Society, Cedar Rapids, Iowa, Oct. 1-3. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.
- Nevada State Medical Association, Elko, Sept. 26-27. Dr. Horace J. Brown, P. O. Box 698, Reno, Secretary.
- Oregon State Medical Society, Portland, Sept. 3-6. Dr. M. L. Bridgeman, 1020 S. W. Taylor St., Portland, Secretary.
- Pacific Association of Railway Surgeons, Salt Lake City, Sept. 12-13. Dr. W. T. Cummins, 1400 Fell St., San Francisco, Secretary.
- Pennsylvania Medical Society of the State of, Pittsburgh, Oct. 6-9. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.
- Rocky Mountain Medical Conference, Yellowstone Park, Wyo., Sept. 2-4. Mr. Harvey T. Setlman, 1612 Tremont Place, Denver, Secretary.
- Vermont State Medical Society, Burlington, Oct. 2-3. Dr. Benjamin F. Cook, 154 Bellevue Ave., Rutland, Secretary.
- Virginia Medical Society of, Virginia Beach, Oct. 6-8. Miss A. V. Edwards, 1200 East Clay St., Richmond, Secretary.
- Wisconsin State Medical Society of, Madison, Sept. 10-12. Mr. G. B. Larson, 110 East Main St., Madison, Acting Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1931 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery

10:397-472 (June) 1941

- Shifting Scenes of Medical Practice: President's Message. S. A. Gordon, Marion.—p. 397.
Gastric Hemorrhage: Its Significance and Management. J. P. Chapman, Selma.—p. 403.
Treatment of Diabetes Mellitus: Difficulties Encountered in Rural Population. A. Mazyck, Dothan.—p. 406.
Enuresis: Review of Literature on Etiology and Treatment. S. P. Wainwright, Birmingham.—p. 408.

American Journal of Medical Sciences, Philadelphia

201:785-932 (June) 1941

- Possible Adaptation to Low Vitamin B₁ Intake. F. M. Meyers, Petoemboekan, East Coast of Sumatra, Netherland East Indies.—p. 785.
Response of Blood Donors to Iron. A. C. Santy, New York.—p. 790.
*Bee Venom in Treatment of Chronic Arthritis. J. L. Hollander, Philadelphia.—p. 796.
Heberden's Nodes: Heredity in Hypertrophic Arthritis of Finger Joints. R. M. Stecher, Cleveland.—p. 801.
Seasonal Variation in Water Content of Respiratory Tract of Birds and Mammals. E. M. Boyd and G. M. Johnston, Kingston, Ont., Canada.—p. 810.
Effect of Phenobarbital on Normal and Impaired Dextrose Tolerance. J. A. Rosenkrantz and M. Bruger, New York.—p. 815.
Dietary Hypercholesterolemia. A. Steiner and Beatrice Domanski, New York.—p. 820.
Incidence of Certain Signs and Symptoms at Various Levels of Basal and Total Resting Metabolism: Analysis of 1,000 Cases. J. J. Short, New York.—p. 824.
Prothrombin Significance in Pulmonary Tuberculosis. J. W. Savacool, Philadelphia.—p. 830.
Survival Time After Transfusion of Erythrocytes of Citrated Human Blood Stored at from 4 to 6 Centigrade. W. P. Belk and B. C. Barnes, Philadelphia.—p. 838.
Effect of Glucose in Preservation of Citrated Human Blood Stored at from 4 to 6 Centigrade. W. P. Belk and Florence Rosenstein, Philadelphia.—p. 841.
Leukemoid Reactions. J. M. Hill, Dallas, Texas, and C. N. Duncan, Boston.—p. 847.
Atrioventricular Nodal Rhythm. N. Flaxman, Chicago.—p. 857.
Tibial Artery Changes in Comparison with Those of Radial and Coronary Arteries. S. W. Sappington and J. A. Horneff, Philadelphia.—p. 862.
Reactivity of Intracranial Vessels in the Aged. D. E. Cameron, Albany, N. Y., and S. R. Rosen, Boston.—p. 871.
Effect of Pregnancy on Experimental Hypertension in Rabbit. J. D. Corbit Jr., Philadelphia.—p. 876.
Fibrillary Twitchings: Investigation of Their Site of Origin. C. H. Sheldon and H. W. Woltman, Rochester, Minn.—p. 884.
Animal Experiments Concerning Hormone Therapy of Testicular Atrophy. H. Selye and S. M. Friedman, Montreal, Canada.—p. 886.

Bee Venom in Chronic Arthritis.—Hollander administered bee venom to 42 patients with rheumatic disease. The ages of the patients ranged from 23 to 69 years, and the duration of the disease from five months to thirty-three years. Foci of infection were eliminated before treatment was begun. The diet was low in carbohydrate, high in vitamins and of adequate caloric value. No other treatment was given. To obviate any psychic benefit, 17 similar patients were given injections of a mild nonspecific protein solution. None of the 42 patients with chronic arthritis were completely relieved; 3 were definitely improved, 5 were moderately better, 9 experienced some relief but relapsed soon after the injections were discontinued, 22 were unaffected and 3 were definitely worse. Of the control series 3 were improved, 5 were better while receiving injections but obtained no lasting benefit, and the condition of 9 was unchanged. The filamented-nonfilamented neutrophil ratio did not closely follow the degree of apparent benefit, but 7 had shifts toward normal. Untoward reactions were uncommon. In several instances the local reaction was excessive, the wheals showing pseudopod formation and edema. Two patients showed symptoms of toxicity, necessitating termination of treatment.

American Journal of Tropical Medicine, Baltimore

21:369-506 (May) 1941

- *Rocky Mountain Spotted Fever: Results of Fifteen Years' Prophylactic Vaccination. R. R. Parker, Hamilton, Mont.—p. 369.
Immunization Against Yellow Fever with Consideration of Effects of Virulent Neurotropic Strain on Central Nervous System of Monkeys. A. W. Sellards, Boston.—p. 385.
Experimental Human Infection with Sparganum Larva of *Spirometra mansonioides* (Mueller, 1935). J. F. Mueller and F. Coulston.—p. 399.
Classification of Strains of *Candida* (Monilia) Isolated from Sputum. K. L. Burt and Helen M. Ketchum, Howell, Mich.—p. 427.
Recent Observations on *Coccidioides* Infection. J. F. Kessel, Los Angeles.—p. 447.
Toxic Reactions Following Use of Atabrine in Malaria. W. N. Bispham, Baltimore.—p. 455.
Evaluation of Drugs in Experimental Leishmaniasis. H. Y. Soong and H. H. Anderson, Peiping, China.—p. 461.
Drug Resistance Acquired During Treatment of Sleeping Sickness with Tryparsamide and with Bayer 205. F. Hawking, Tanganyika Territory, East Africa.—p. 469.
Comparison of Incidence of Filariasis (*Wuchereria bancrofti*) in Islands of St. Thomas and St. Croix. G. M. Saunders, Charlotte Amalie, Virgin Islands, U. S. A.—p. 481.
Plasma Vitamin C Levels in Group of Children Before and After Dietetic Adjustment. D. F. Milam, Durham, N. C., and W. Wilkins, Raleigh, N. C.—p. 487.
Studies in Bite Desensitization. Barbara C. McIvor and L. S. Cherney, San Francisco.—p. 493.

Rocky Mountain Spotted Fever.—Parker presents data on the protective value of vaccination against Rocky Mountain spotted fever based on fifteen years of use in an area of western Montana, a two year test among a highly exposed occupational group in an area of southern Idaho, and on thirteen years of experience in sections of the West other than the western Montana area. The duration of protection seldom exceeds the year of vaccination. Annual immunization appears to be the only safe procedure. Persons vaccinated only once who become infected that same season have sufficient protection to modify the infection, to insure recovery and to shorten convalescence. Persons vaccinated more than once are better protected, and evidence suggests that some such persons carry a degree of immunity into at least the year following the last vaccination. Full protection is frequent against strains of low virulence but is at most only occasional against highly virulent strains. Children are more fully and more frequently protected than adults. If a person is infected during the period of immunization, his subsequent clinical course will be affected favorably even in areas with high fatality rates. In areas with predominant mild infections and prolonged periods of incubation the administration of vaccine soon after tick bite may ameliorate an impending infection. This is not recommended under reverse circumstances unless the patient has been vaccinated previously.

American Review of Tuberculosis, New York

43:713-860 (June) 1941

- Clinical Diagnosis of Primary Carcinoma of Lung. S. Diamond, Legion, Texas.—p. 713.
*Bronchomoniliasis. C. J. Koerth, J. M. Donaldson Jr. and R. G. McCorkle, San Antonio, Texas.—p. 723.
Lipoid Pneumonia: Report of Case Simulating Bronchial Carcinoma. J. J. Singer and L. J. Tragerman, Los Angeles.—p. 738.
Management of Syphilis in Tuberculous Patient. P. Murphy and L. Bromberg, St. Louis.—p. 748.
Dualistic Concept of Phthisis. I. Rappaport, New York.—p. 761.
Contralateral Lung in Pulmonary Tuberculosis. A. D. Calomeni, Saginaw, Mich.—p. 767.
Bronchial Stenosis and Unexpandable Lungs: Report of Two Cases. J. E. Farber, Buffalo.—p. 779.
Paraffin Pack in Treatment of Pulmonary Tuberculosis. F. Ottaviano, New York.—p. 785.
Insatiable Pneumothorax: Remarks to Paper of Dr. E. Korol. M. Lucacer, Brooklyn.—p. 793.
Patch and Purified Protein Derivative Tests and X-Ray Correlation. P. D. Crimm, H. N. Cookson and M. Broadbent, Evansville, Ind.—p. 799.
Vole Acid-Fast Bacillus: I. Experimental Studies on New Type of *Mycobacterium* Tuberculosis. W. S. Brooke, Baltimore.—p. 806.
Carbohydrate Content of Proteins in Blood Serum, Cantharidin Blisters and Pleural Effusions. B. Lustig, London, England, and E. Nassau, Harefield, England.—p. 817.
Complement Fixation in Tuberculous Dogs. C. C. Shepard, Ruth W. Jung, Charlotte A. Colwell, F. D. Gunn and E. A. Barth, Chicago.—p. 825.
Psychologic Testing of Tuberculous Patients: Intelligence, Occupational Preferences and Clerical Aptitudes of Tuberculous Patients, with Reference to Rehabilitation Program. I. T. Schultz and H. Rush, Indianapolis.—p. 839.

Bronchomoniliasis.—Koerth and his co-workers report 2 cases of bronchomoniliasis. The sputum of the first patient contained a monilia identified by one investigator as *Monilia candida* and by another as *Monilia tropicalis*. This patient

presented an unusual roentgenogram, successive involvement and subsequent resolution in different parts of both lungs. The roentgenogram in case 2 showed chronic productive tuberculosis with cavitation, fibrosis and calcification. Tubercle bacilli were never demonstrated in the sputum, while *M. tropicalis* was constantly present. Another interesting feature was a pharyngeal ulcer from which *M. tropicalis* was isolated. A feature common to the two cases was the extent of the pulmonary pathologic changes and the scarcity of symptoms. The fact that the patient's blood serum agglutinated the organism while the serum of controls did not is evidence that the monilia was the causative organism in case 1. The occurrence of positive cutaneous reactions in case 2, while controls showed no reaction to a suspension of the monilia, is of significance. Pathogenicity for laboratory animals was not demonstrated for the organism isolated from the sputum in either case. Iodides have been found to be efficacious. Iodide therapy may well be supplemented by subcutaneous injections of vaccines prepared from cultures of the organism isolated from the patient's sputum. Tar, thymol, gentian violet and methylene blue also have been useful.

Archives of Neurology and Psychiatry, Chicago

45:903-1072 (June) 1941

- Electroencephalographic Classification of the Epilepsies. H. Jasper and J. Kershman, Montreal, Canada.—p. 903.
 Involutional Melancholia: Review with Additional Cases. A. A. Werner, St. Louis; E. F. Hoctor and C. C. Ault, Farmington, Mo.—p. 944.
 Paranoid Syndrome. C. W. Miller Jr., Medical Lake, Wash.—p. 953.
 Human Pyramidal Tract: III. Magnitude of Large Cells of Motor Area (Area 4). A. M. Lassek, Charleston, S. C.—p. 964.
 Peripheral Blood Flow in Schizophrenia and Other Abnormal Mental States: Plethysmographic Study. D. I. Abramson, N. Schkloven and K. H. Katzenstein, Cincinnati.—p. 973.
 Encephalopathy Due to Burns: Report of Case. N. Roth, New York.—p. 980.
 Intracranial Chordoma. H. Zeitlin and S. A. Levinson, Chicago.—p. 984.
 Pilocarpine Sweating Test: I. Valid Indicator in Differentiation of Preganglionic and Postganglionic Sympathectomy. O. R. Hyndman and J. Wolkin, Iowa City.—p. 992.
 Sublingual Absorption of Prostigmine Bromide. H. M. Salzer, Cincinnati.—p. 1007.
 Porencephalic Cyst: Report of Case with Arteriographic Studies. V. W. Eisenstein and H. K. Taylor, New York.—p. 1009.

Archives of Otolaryngology, Chicago

33:909-1122 (June) 1941

- Estrogens and Their Effect on Ciliated Mucosa. E. M. Boyd, J. W. Clark and W. F. Perry, Kingston, Ont., Canada.—p. 909.
 Modern Treatment of Otosclerosis. V. Nasjell, Stockholm, Sweden.—p. 916.
 *Acute Laryngotracheobronchitis: Analysis of Sixty-Two Cases with Report of Autopsies in Eight Cases. H. B. Orton, E. L. Smith, H. O. Bell and R. A. Ford, Newark, N. J.—p. 926.
 Chemotherapy: E. E. Osgood, Portland, Ore.—p. 961.
 Changes in Vestibular Sensitivity in Ménière's Syndrome and Their Significance. M. Atkinson, New York.—p. 969.
 Involvement of Jaw Joint in Acute Suppurative Otitis Media. G. E. Shambaugh Jr., Chicago.—p. 975.
 Vasomotor Rhinitis: Proposed Classification Based on Analysis of Seventy-Four Cases. E. Urbach, Philadelphia.—p. 982.
 Surgical and Nonsurgical Care of Chronically Discharging Middle Ear. Rea E. Ashley, San Francisco.—p. 993.
 Experiences with Endaural Surgery: Preliminary Report. L. F. Johnson and B. Zonderman, Boston.—p. 1004.
 Clinical Significance of Aural Polyps. F. L. Lederer, Chicago.—p. 1008.
 Peroral Endoscopy. L. H. Clerf, Philadelphia.—p. 1042.

Laryngotracheobronchitis.—From an analysis by Orton and his associates of 62 cases of acute laryngotracheobronchitis in children and 8 postmortem studies, it appears that more than half of the patients had previous colds or infections of the upper part of the respiratory tract in which the predominating organism was a streptococcus. The average duration of illness before hospitalization was usually three days. Forty of the patients were males and 22 females; 47 were less than 3 years of age. The ages of others extended over the first decade. There were 17 deaths. Acute laryngotracheobronchitis in young children is an important problem both for the general practitioner and for the pediatrician. Its proper handling requires early recognition. When signs of obstructive dyspnea appear, valuable time should not be wasted by giving diphtheria antitoxin. When acute laryngotracheobronchitis is suspected, the patient should be transferred to a hospital where direct laryn-

gосcopy and bronchoscopy and a more active treatment such as intubation and tracheotomy (the operation of choice) may be done at a moment's notice. If time permits, roentgen study should be made prior to operation; otherwise it should follow the tracheotomy. Intubation should be done only for immediate relief; it should be followed by tracheotomy. Patients should be in a room with the temperature at 70 F. and the air supersaturated. This provides a more comfortable environment than the old fashioned hot croup tent. The temperature and humidity have more effect on comfort than does the concentration of oxygen.

Bulletin New York Academy of Medicine, New York

17:403-484 (June) 1941

- Utilization of Selective Microbial Agents in Study of Biologic Problems. R. J. Dubos, New York.—p. 405.
 Present Status of Treatment of Subacute Bacterial Endocarditis. A. C. DeGraff, New York.—p. 423.
 Treatment of Infections by Methods Other Than Chemotherapy. W. Thalheimer, New York.—p. 434.
 Infections of Middle Ear and Nasal Sinuses. W. C. Bowers, New York.—p. 453.
 Critical Evaluation of Results of Routine Conservative Treatment of Syphilis. H. T. Hyman, New York.—p. 467.

Michigan State Medical Society Journal, Muskegon

40:409-488 (June) 1941

- Gonococcal Infections: Diagnosis and Criterion of Cure. A. Jacoby, New York.—p. 435.
 *Gonorrhea in the Female. R. Deakin and D. R. Smith, St. Louis.—p. 440.
 *Gonorrhea in the Male: Modern Treatment. P. S. Pelouze, Philadelphia.—p. 444.
 Primary Tuberculous Infection in the Adult. H. C. Sweany, Chicago.—p. 448.
 Cyanosis of Newborn. C. F. McKhann, Ann Arbor.—p. 455.
 Early Beginnings of Preventive Medicine in Michigan. E. E. Kleinschmidt, Chicago.—p. 458.

Gonorrhea in the Female.—Deakin and Smith believe that the most important consideration in the treatment of gonorrhea in women is the consistency with which chemotherapy renders them noninfectious at the end of five days. The control of gonorrhea is predicated on its effective treatment in women. Rapid sterilization of their infection is of paramount importance, for it prevents spread of the infection to the male, it prevents complications, which so frequently occur at the time of menstruation, and it decreases the incidence of gonorrheal ophthalmia. It is not advantageous to continue the sulfonamide therapy for more than a week. If the desired result is not obtained in this time, it is more than likely that it will not be obtained. It appears that prolonged sulfonamide therapy prevents the development of an immunity response to the gonococcus because of its frequent production of anorexia, loss of weight and perhaps anemia. Failure in the treatment of gonorrhea usually results from negligence on the part of the patient, lack of cooperation, ignorance, overtreatment and the injudicious use of sulfonamides. Gonorrhea is fundamentally a self-limited disease, and overtreatment only serves to nullify nature's efforts to effect a cure. It seems likely that sulfonamide-resistant cases of female gonorrhea will increase as time goes on. Unauthorized self medication and improper sulfonamide therapy already present a difficult problem in male gonorrhea. Sulfathiazole therapy should not be repeated in the event of a relapse. If, after a free interval of several weeks, evidence of clinical infection (vaginal inflammation and discharge) with negative gonococcus cultures presents itself, a nonspecific bacterial process is reasserting itself after an initial bacteriostatic sulfathiazole effect has worn off. Lactic acid douches have been successful in overcoming this complication. Caution must be exercised in the prognosis given to female patients with gonorrhea. The adoption of a standard record form and its use in treatment centers would expedite the accumulation of sufficient data from which to draw definite conclusions.

Gonorrhea in the Male.—Pelouze states that of the three widely used sulfonamide drugs for the treatment of gonorrhea—sulfanilamide, sulfapyridine and sulfathiazole—the latter is unquestionably best owing to its far lower toxicity.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Heart Journal, London

3:75-144 (April) 1941

- Variable Ventricular Complexes in Heart Block and Their Relation to Bilateral Bundle Branch Block. C. W. C. Bain.—p. 75
Hydrothorax in Heart Failure. D. E. Bedford and J. L. Lovibond.—p. 93.
Comparison of Mercurial Diuretics Used in Heart Failure W. Evans and T. Paxton.—p. 112
Coarctation of Aorta with Patent Ductus Arteriosus J. G. Graham and J. D. O. Kerr.—p. 121
Myocardial Contusion: Fatal Case H. Barber and G. R. Osborn.—p. 127.
Ruptured Aortic Valve with Mycotic Aneurysm Due to Acute Bacterial Endocarditis. C. W. C. Bain and S. Wray.—p. 132.

British Journal of Tuberculosis, London

35:53-124 (April) 1941

- George Bodington, 1799-1882: Pioneer of Open Air Treatment of Pulmonary Tuberculosis R. J. Cyriaque.—p. 58
Pathogenesis of Tuberculosis in Calf E. G. White and F. C. Minett.—p. 69
Besnier Boeck's Disease Review H. Hannesson.—p. 88.

British Journal of Urology, London

13:1-42 (March) 1941

- Juxtarenal Infections T. Moore.—p. 1.
Ruptured Urethra: Technic for Secondary Repair C. A. Wells.—p. 8

British Medical Journal, London

1:739-766 (May 17) 1941

- Traumatic Epilepsy After Gunshot Wounds of Head. P. B. Ascroft.—p. 739.
Recent Mortality from Bronchitis in London R. M. F. Picken.—p. 744
*Bacteriostatic Effect of Disinfectants in Human Serum and Citrated Plasma Margaret E. MacKay.—p. 747.
Lactose for Prevention of Odor in Closed Cast Treatment of Compound Fractures A. D. Wallis and Margaret J. Dilworth.—p. 750
Acute Dilatation of Stomach M. Lee and E. Somerville.—p. 751.

1:767-804 (May 24) 1941

- Da Costa's Syndrome (or Effort Syndrome). P. Wood.—p. 767.
Cerebral Symptoms Occurring During Sulfapyridine Treatment of Meningococcal Meningitis D. F. Johnstone and F. Forgaes.—p. 772.
Loss of Vision Following Hemorrhage H. L. Tidy.—p. 774.
Upper Arm Splint with Shoulder Yoke as Main Support. J. Knittingen.—p. 776
Loss Silk Lattice Posterior Repair Operation for Direct Inguinal Hernia R. Maingot.—p. 777

Disinfectants in Serum and Plasma.—MacKay experimented with merthiolate, metaphen, phenyl mercuric nitrate, phenyl mercuric acetate, proflavine, sulfanilamide, thymol and *p*-chlor-*m*-cresol to determine their efficacy as disinfectants for human serum and citrated plasma. Proflavine proved to be the most effective. In a concentration of 1:100,000 it prevented the growth of *Staphylococcus aureus* and *Bacillus subtilis* for six days and of enterococci for three days. A dilution of 1:10,000 had no effect on *Pseudomonas aeruginosa* or mold. Much higher concentrations were equally ineffective against *Pseudomonas*. The danger of toxic reactions prohibits the use of higher concentrations. Metaphen in a dilution of 1:10,000 inhibited the growth of *Staph. aureus* and *B. subtilis* in serum for six days, but enterococci and *Ps. aeruginosa* grew in this concentration. Merthiolate had an activity of the same order as metaphen, except that no growth of enterococci could be demonstrated in six days in a 1:10,000 concentration. This dilution did not prevent the growth of *Ps. aeruginosa*. Merthiolate is relatively nontoxic and does not affect serum proteins. Phenyl mercuric nitrate was effective against *Staph. aureus* and *B. subtilis* in a dilution of 1:50,000, but not against enterococci after six days, and a 1:10,000 dilution had no effect on *Ps. aeruginosa*. The growth of mold was inhibited by a 1:80,000 dilution. Drying the serum in the presence of a 1:10,000 dilution of phenyl mercuric nitrate had no effect on the osmotic pressure after reconstitution. The chief objection to its use is its insolubility in water, a saturated solution containing only 0.79 Gm. per liter. Phenyl mercuric acetate

appeared effective in a concentration of 1:100,000, but serum proteins were precipitated. Sulfanilamide proved ineffective in inhibiting bacterial growth in serum and plasma. In serum it cannot be relied on for longer than twenty-four hours. Sulfanilamide will prevent the growth of *B. subtilis*, *Micrococcus tetragenus* and *Pseudomonas* in whole blood for thirty days at 39.2 F. but not at 71.6 F. Thymol and *p*-chlor-*m*-cresol were unsuitable as serum preservatives: both allowed the growth of organisms in a dilution of 1:2,000 and precipitated serum protein.

Lancet, London

1:593-622 (May 10) 1941

- Apparently Trivial Head Injuries W. McKissock and B. Browncombe.—p. 593.
"Substance B" of Diphtheria Toxin and Diffusing Factor D. McClean.—p. 595
Peptic Ulcer in Royal Navy: Etiology. R. S. Allison.—p. 596.
Influence of Estrogens on Experimental Canine Diabetes Mellitus. F. G. Young.—p. 600
Human Diabetes Treated with Estrogens. R. D. Lawrence and Kate Madders.—p. 601.

1:655-684 (May 24) 1941

- Address to Royal College of Physicians C. Wilson.—p. 655.
Diphtheria Bacilli in Floor Dust. W. E. Crosbie and H. D. Wright.—p. 656
Measurement of Heart in Angular Degrees F. C. Eve.—p. 659
*Congenital Pyloric Stenosis Treated with Eumydrine R. H. Dobbs.—p. 661.
Allergic Reaction to Liver Extract. C. T. Andrews.—p. 664.
Bulbar Palsy Due to Atheromatous Vessel H. J. Anderson and C. F. Peitch.—p. 665.
Meningitis Due to Salmonella London. K. F. Wilsdon and Anne Gibson.—p. 665.

Eumydrine for Congenital Pyloric Stenosis.—Dobbs has used eumydrine (atropine methylnitrate) for the treatment of 40 children with congenital pyloric stenosis. The response to eumydrine therapy depends on when vomiting ensued; if the child had not vomited until the fourth week of life, his response was rapid and he could be treated as an outpatient. Medical treatment cured 27 of the children, 8 were operated on, 1 died during medical treatment and 4 died after surgical treatment. Of the cured children, 3 were treated from the outset as outpatients, 20 were discharged within three weeks of admission and 4 remained in the hospital for more than three weeks. The 13 infants who responded rapidly were almost exclusively those who were 4 or more weeks old when vomiting began, and the weight of 12 of these had increased since birth. The average age of these children at the onset of symptoms was 5 weeks, 7 weeks at the time of admission, and they had gained an average of 14 ounces (396 Gm.) over their birth weight. These salient points are emphasized by the corresponding figures of 6 and 10 weeks and a gain of more than 1 pound (0.5 Kg.) in weight for the 3 children who were treated as outpatients. The points are still further emphasized by the fact that the other 14 children who were cured were on an average less than 3 weeks of age at the onset of vomiting, were usually about 4½ weeks old when admitted to the hospital and had lost or had not gained over their birth weight. Of the 12 children operated on in whom treatment with eumydrine failed, all were boys and all but 2 were first born. The author concludes that patients with congenital pyloric stenosis admitted to hospitals will sooner or later respond to medical treatment. Since medical treatment for a few must be lengthy, the relative risks of operation (direct surgical risk and risk of postoperative infection) have to be balanced against the risks of a long hospitalization. The risk of a long hospitalization may, in the long run, prove to be more than counterbalanced by the adverse effects of operation on the resistance of these infants to infection.

Medical Journal of Australia, Sydney

1:629-660 (May 24) 1941

- A Surgical Quest. H. S. Newland.—p. 629.
Australian Bread: Its Vitamin B₁ Content and Its Importance in the Australian Dietary. F. W. Clements, E. C. Slater and E. J. Rial.—p. 634.
X-Ray Examination in Recent Head Injuries A. Schuller.—p. 641.
Agglutinins for Typhoid and Paratyphoid Bacilli in Serum in South Australia. Nancy Atkinson.—p. 642
Useful Methods in Treatment of Fractures Below the Knee. C. Craig.—p. 644.

Schweizerische medizinische Wochenschrift, Basel

71:457-480 (March 29) 1941

Pregnancy Anemia. H. Guggisberg.—p. 457.

*Typhoid-Paratyphoid Tetanus Vaccination: Immunity Conferred by it and Effect on Serologic Diagnosis of Typhoid. R. Regamey and A. Grumbach.—p. 463.

*Value of Typhoid-Paratyphoid Vaccination. A. Grumbach.—p. 468.
Epidemic Pleurodynia: Observations and Considerations. E. Lejeune.—p. 469.

Typhoid-Paratyphoid-Tetanus Vaccination.—Regamey and Grumbach investigated the degree of antitetanus immunity conferred by typhoid-paratyphoid-tetanus vaccination and its effect on the serodiagnosis of typhoid. The study was based on the inoculation and subsequent examination of 50 subjects who had been divided into two numerically equal groups. The first group consisted of recent recruits about 20 years of age, the second were men already in military service with an age level ranging from 21 to 32 years. Both groups were given the combined vaccination three times, the first at monthly, the second at fortnightly intervals. Both groups were tested thirty-two and one hundred and twelve days after the last vaccination for both the antitoxic and the agglutination titer. In the immunologic test the serums taken on these occasions possessed an average antitoxic titer of 5 international units and 1 international unit, respectively, per cubic centimeter. The test demonstrated tetanus antitoxin levels superior to those afforded by the inoculation of 2,500 international units, the younger subjects making a better showing. All could be regarded as immune. For the serodiagnostic tests the serums were withdrawn thirty-two days and one hundred and twelve days after the last vaccination in order to determine the O, H and Vi agglutinin levels. In their determination of the H and O titers, the authors found that one half of the serums taken one hundred and twelve days after the last vaccination no longer clumped, or only faintly so. The remaining half showed strongly reduced agglutinations in comparison with those sampled after thirty-two days. This reduction was generally more noticeable in the paratyphoid B than in the typhoid agglutinins. No essential differences were observed in the relations between the H and O agglutinins of both groups in respect either to typhoid or to paratyphoid. It seems as if typhoid O agglutinins appear considerably later than the H agglutinins. The H titer was seen to reach quite high levels. Typhoid Vi agglutinins in Widal's microscopic test were found to occur only in a 1:2 titer; hence a 1:20 titer may be assumed to indicate typhus infection. The authors believe that their observations, limited as they are, bear out the results established by Felix. Since typhoid and paratyphoid B O agglutinins are found in vaccinated subjects, no diagnostic value can be attributed to them in individual cases.

Value of Typhoid-Paratyphoid Vaccination.—Grumbach takes issue with statements belittling the prophylactic value of typhoid-paratyphoid vaccination. These appeared originally in a French publication and were subsequently taken up by a contributor to the *Schweizerische medizinische Wochenschrift*. The French writer maintained that morbidity from typhoid-paratyphoid infection had begun rapidly to disappear in the French army already during the fifty years preceding the introduction of vaccination and that a similarly rapid morbidity decline had been noted since 1914 in the French civilian population, which was not subject to the compulsory vaccination law. The real proof of the efficacy of this vaccination, according to the French writer, lies in the automatic extinction of these diseases in those vaccinated and its persistence in the nonvaccinated. The French writer went so far as to say that "official figures, based on a vaccination material of more than 2,000,000 cases, justified the conclusion that the immunity conferred by typhoid-paratyphoid vaccination was wholly ineffective." Grumbach, in combating the reasoning of the French author and what he calls his manipulation of official statistics, refers to the official report prepared at the direction of the ministry of the French army and navy and published in the bulletin of the International Office of Public Health in 1936. The prophylactic value of typhoid-paratyphoid vaccination is here clearly revealed in the decline of morbidity and mortality rates for the French army and navy and among the colonial troops. While a 100 per cent prophylaxis is highly desirable, a mortality decrease varying from 5 to 20 per

cent which cannot be ascribed to other therapeutic measures is not to be treated lightly. The well known lowering of typhoid-paratyphoid infection in the civilian population, clearly attested by postwar (1925-1934) figures, is due to the general progress in public sanitation. Statistics for the English and American armies on French soil during the World War, as well as additional statistics adduced by the author, tell the same story.

Clinica Ostetrica e Ginecologica, Rome

42:297-348 (July) 1940. Partial Index

Short Wave Irradiations on Hypophysis in Labor. E. Giudici.—p. 297.

*Treatment of Apparent Death in Newborn Infants. U. Erede.—p. 331.

Treatment of Apparent Death in Newborn Infants.—Erede practiced injection of 10 cc. of a 10 per cent solution of sodium chloride in the treatment of apparent death of newborn asphyxiated infants. The infant is warmed, and the respiratory tract is freed from obstruction. No resuscitation maneuvers were practiced. An assistant holds the umbilical vein while the surgeon injects the hypertonic solution heated to 40 C., alone or with heart stimulants added to it. The heart starts beating, as a rule, before the injection is finished. If two or three minutes pass without a reaction, nothing more is to be expected from the treatment. The treatment is harmless and has given good results in the last five years.

Ugeskrift for Læger, Copenhagen

103:197-226 (Feb. 13) 1941. Partial Index

Physiology and Biology of Vitamin A and Vitamin A Requirement. T. K. With.—p. 197.

*Cases of Precordial Sounds Audible at Distance. J. Frost and J. Bing.—p. 202.

Precordial Sound Audible at Distance.—Frost and Bing report 3 cases with precordial sounds audible at a distance due to adventitious systolic and diastolic sounds; the first in a healthy young woman in whom no abnormalities could be demonstrated, the second in a young man with spontaneous pneumothorax on the left side, and the third in a young woman with pulmonary tuberculosis and artificial pneumothorax on the left side. The sound was characteristically heard when the patients lay on the left side. In one instance roentgen examination during auscultation verified that the sound occurred when the heart during its movement touched the chest wall. Phonocardiograms in 2 of the cases showed that the sounds correspond to what had previously been called the "systolic clicking" adventitious sound. In one case there was also a corresponding diastolic extra sound. The sound, which suggests the clicking of the tongue used to urge on a horse, has already been used by French clinicians as an aid in diagnosing spontaneous pneumothorax on the left side.

103:227-256 (Feb. 20) 1941. Partial Index

*Aortic Insufficiency as Result of Spontaneous Rupture of Aorta. V. Eskelund.—p. 240.

Aortic Insufficiency from Spontaneous Rupture of Aorta.—Eskelund says that ruptures of the aorta are generally traumatic and that the far less frequent so-called spontaneous ruptures occur without demonstrable or known cause. These spontaneous ruptures may be complete and rapidly lead to death, while in other cases dissecting aneurysms are formed. Sometimes healing of a kind takes place, but the thin and inelastic scar tissue gradually yields to the pressure of the blood, and sharply defined aneurysms occur whose opening into the lumen clearly show their formation to be due to a rupture. The author found in the literature eighty-five more or less complete reports of spontaneous ruptures of the aorta, at all ages, fifty-six of them in men. Chronic renal disorders and arteriosclerosis were frequently coexistent. He thinks it likely that the so-called spontaneous rupture is the expression of a pathologic process in the vascular walls and that the rupture most often occurs when the blood pressure rises beyond the limits of the vascular resistance or depends on a relatively unnoticed trauma. In the case described, the spontaneous rupture at the root of the aorta, although healed, caused the development of an aneurysm, and death resulted from insufficiency of the aortic valve through dilatation of the aorta; there were signs of chronic vascular infection of unknown origin.

Book Notices

The Traumatic Neuroses of War. By Abram Kardner, M.D., Psychosomatic Medicine Monograph II-III. Published with the Sponsorship of the Committee on Problems of Neurotic Behavior, Division of Anthropology and Psychology, National Research Council, Washington, D. C. Paper. Price, \$3. Cloth. Price, \$3.50. Pp. 258. Washington, D. C.: National Research Council; New York: Paul B. Hoeber, Inc., 1941.

The publication of this excellent monograph is opportune in view of the present world situation and the consequent results of exposure to the traumas of war and the preparations for war. In the foreword and introduction the author states the purpose of the book to be a "guide to the study, treatment and postwar care of those neurotic disturbances which are incidental to war. . . . This book does not purport to treat all the psychic syndromes which can be called the traumatic neuroses. Its purpose is to establish the symptomatology, criteria for differential diagnosis and to establish a rationale for therapy." That the book goes a long way in fulfilling its author's purpose is obvious to the objective reader. The monograph is divided into three parts, clinical, theoretical and practical, and the author cites a wealth of case material to demonstrate the clinical forms of traumatic neuroses together with a careful analysis of the symptomatology, the aspects of the personality involved in the neuroses and a logical and thoughtful discussion of the psychopathology and therapy. The symptomatology is described as acute, transitional and stabilized, the time interval between acute and stabilized varying from two weeks to six months. For the purpose of study the stabilized form is of most importance. From this starting point the author proceeds to discuss the whole subject from a dynamic point of view and does not fall into the common fault of so many writers on this and allied subjects of submitting to the reader a purely descriptive word picture. As the author states, he is not satisfied to discuss content but attempts to shift the emphasis from content to form, to determine which executive function is interfered with and the reason for the interference. This monograph should be in the library of every psychiatrist. It could well be used as a textbook in the study and treatment of traumatic neuroses.

La créatine: Étude physio-pathologique. Par Jean Vague, chef de clinique, et Jean Dunan, chef de laboratoire à la Faculté de médecine de Marseille. Préface du P^r J. Roche. Paper. Price, \$1.40. Pp. 256. Paris: Masson & Cie, 1939.

This, the first French monograph on creatine, is a thorough review and evaluation of the literature, particularly from the pathologic and clinical points of view. A brief historical introduction is followed by a discussion of the chemical and physical properties, the structural relations between creatine and creatinine and a list of their derivatives without any data on their properties. The usual possible precursors and degradation products are also given. The analytic section is presented in a fairly critical manner. Although the specific enzyme method of Miller and Dubos is referred to, a detailed description is not given. The authors' own observations are based on results with their own method, which is an improvement over the Folin procedure but which lacks the specificity of the enzyme method. The method for estimating phosphagen phosphate is accepted without questioning either its specificity or the interpretations based thereon. Unfortunately the authors have not, in their evaluation of analytic data from numerous sources, kept in mind the shortcomings of the methods used by many investigators. This is a real difficulty in evaluating the older studies on creatine-creatinine metabolism and distribution. The rapid and progressive synthesis of creatine and phosphagen in embryonic development and the lack of our knowledge of the true precursors is discussed. The usual explanations for creatinuria in the young are given with a tendency to accept the views of Denis and Kramer and Harding and Gaebler that the muscular development is not sufficient to keep up with the creatine as formed during growth. The wide distribution of creatine is considered to call for a very general function; this function is the same as that found in voluntary muscle; that is, one of the links in the complex chemical and physical process involved in the utilization of carbohydrate in muscular activity. In certain

invertebrates in which creatine is lacking, the phosphoarginine is considered to function the same way in which phosphocreatine does in mammalian tissues.

The authors emphasize that, although the creatine content of smooth muscle is very low, practically all of it is present as phosphagen, whereas in heart muscle and especially in the ventricle, where the creatine content is high, the proportion present as phosphagen is lower. In fact, the relative amounts of creatine and phosphagen present in a tissue are considered to determine its excitability. The same generalization is again emphasized in connection with contractility, tonicity and excitability of any biologic system including the smooth muscle in secreting glands, in testes, in spermatozoa, and even in the process of mitosis. Under pathologic aspects, myopathy, muscular atrophy, myasthenia gravis and muscular atrophy following rickets are discussed and the possible relation of lesions in the diencephalon, mesencephalon and vegetative nervous system and/or of dietary deficiencies to these disease conditions is suggested. Parkinson's syndrome is characterized by creatinuria without a hypercreatinemia. Lesions of peripheral nerves are frequently associated with a creatinuria which is augmented by the administration of aminoacetic acid. Beriberi and pellagra are also associated with creatinuria. In spite of the frequent lack of correlation of muscle fatigue with changes in the concentration of creatine and creatinine in blood, urine and muscle, the authors nevertheless state that the behavior of the fatigued muscle is in accord with the biochemical concept of muscle activity. In the consideration of circulatory disturbances, attention is called to the fact that thyroxine lowers the creatine and phosphagen content of the myocardium in parallel with the lowering of the glycogen. In the face of contradictory experimental observations the conclusion is arrived at that the creatinuria with a frequently observed hypocreatinemia can be correlated with changes in the creatine and phosphagen content of the diseased myocardium. It is also suggested that careful studies in creatine metabolism in hypertension may lead to important findings.

The irregular observations on creatine in endocrinologic experimental and clinical studies are discussed in detail and attempts are made to account for some of the apparent discrepancies. Thus the creatinuria caused by high doses of insulin is explained as due to the disturbance of carbohydrate metabolism in muscle and the consequent convulsions. The creatinuria among the diabetic is explained as due to a lack of phosphorylation, the accumulation of lactic acid and hence a hyperphosphaturia. The old problem of the site and mode of formation of creatinine from creatine is considered at some length and it is concluded that this may take place in many tissues including the liver and kidney but that the latter is not the only nor the main organ involved. Investigations on the structures in the kidney involved in the excretion of creatinine and on creatinine clearance are discussed in some detail. Although remarkable differences in results and interpretations by various experimenters are referred to, the authors nevertheless advise the routine use of urea, creatinine and inulin clearance tests in kidney diseases. The concluding chapter gives a summary of the clinical exploration and conclusions. The confidence of the authors in their interpretations is well illustrated by their statement that, if most of the neuromuscular, digestive, hepatic, endocrine and nutritional disturbances were adequately studied in terms of creatine-creatinine metabolism, data of considerable diagnostic value would become available. The bibliography is limited to the period after 1934 and references are given to previous bibliographies. Separate subject and author indexes are included.

Nociones de dermatología y sifilografía. Por el Dr. V. Pardo Castello, profesor auxiliar de dermatología y sifilografía de la Universidad de la Habana, Cuba, con la colaboración de los doctores Ismael Ferrer et al. Prólogo del Dr. Braulio Sáenz. Second edition. Cloth. Pp. 992, with 276 illustrations. Habana: Cultural, S. A., 1941.

In this edition of one of the most popular dermatologic textbooks used in the Ibero-American countries, one is most struck by the clear, concise style and the logical arrangement of the material. All the known dermatoses, including the exanthems and the cutaneous diseases peculiar to the tropics, are discussed. The orderly, clearcut presentation of the subject matter is ideal

for the student. The absence of discussion of controversial etiologic theories conserves considerable space and also simplifies the subject matter for the student, but it removes a stimulus to thinking for oneself. An excellent feature is the comprehensive discussion of differential diagnosis with regard to each dermatosis considered. The volume is thoroughly up to date. For instance, the influence of strain and instability of the nervous system in the causation of certain of the functional dermatoses is mentioned. The avitaminoses and the indications for vitamin therapy in these disorders and in other dermatoses are discussed. The author is obviously conversant with the use of sulfanilamide and its derivatives in dermatology. In such a modern textbook it is rather surprising to find "hematoporphyrin" used when it is evident that "increase in porphyrins" is meant. To the reviewer the most significant chapters are those on the tropical dermatoses, lymphogranuloma venereum and the lipoidoses.

The section on syphilis is complete, and the detailed clinical descriptions of its cutaneous manifestations are unusually good. The methods of treatment for the most part parallel those used by the Cooperative Clinical Group in the United States. The essentials of therapy are given graphically in a practical and handy table. The discussion of treatment reactions is exceptionally complete and instructive.

The author's presentation reflects a happy blend of the views held by North American and by Ibero-American schools of dermatologic thought. The pronounced differences so often evident between the views and the presentation in medical textbooks by Latin authors and those in their Anglo-Saxon counterparts are absent.

The book is set in clear, large type, the illustrations are more than satisfactory and the binding is exceptionally fine.

Studies on Tuberculosis. The Spread of Tuberculosis in Negro Families of Jamaica, B. W. I. By E. Joyce Seward, Persis Putnam and Eugene L. Ople. The Fate of Negro Persons of a Tropical Country, Jamaica, B. W. I., After Contact with Tuberculosis. By Eugene L. Ople, Persis Putnam and E. Joyce Seward. A Survey of Tuberculous Infection in a Rural Area of East Alabama. By A. H. Graham, P. W. Auston and Persis Putnam. The Fate of Persons Exposed to Tuberculosis in White and Negro Families in a Rural Area of East Alabama. By A. H. Graham, P. W. Auston and Persis Putnam. The American Journal of Hygiene Monographic Series, No. 16, February 1941. Supported by the De Lamar Fund of the Johns Hopkins University. Cloth. Price, \$1.10. Pp. 198, with illustrations. Baltimore: Johns Hopkins Press, 1941.

This work consists of the presentation of the results of several studies on tuberculosis: The first deals with the spread of this disease in Negro families of Jamaica, where it was found that more than 60 per cent of the children from birth to 4 years with manifest tuberculosis in the family react to tuberculin. By the age of 20 years, almost 100 per cent react. The authors state that tuberculosis in the Negro race of Jamaica pursues a much more rapid course than that of white people of European extraction. They point out further that nearly all persons who suffer from pulmonary tuberculosis in Jamaica are disseminators of tubercle bacilli.

The second study concerns the fate of Negro persons of Jamaica after contact with tuberculosis. The authors state that to acquire tuberculosis it is not necessary that infection occur in childhood, since the adults of Jamaica respond as readily to exogenous infection as the children. They are of the opinion that the high level and rising incidence frequency and mortality from tuberculosis in adolescents and adults following exposure to the disease occur as the result of exogenous tuberculous infection.

The third study constitutes a survey of tuberculous infection in a rural area of East Alabama. An initial test dose of 0.01 mg. of tuberculin, with potency well determined, was used. Those who did not react were given 1 mg. as the second dose. Interpretations were based on the presence of induration and not on the area of redness of the skin. Single films were made of the chests of the reactors. All persons whose shadows proved to be due to clinical tuberculous lesions were referred to private physicians for treatment. The frequency of reactors to tuberculin increased with age but was less rapid among Negroes than among white persons. However, when sensitivity was established in Negroes it was more intense and more likely to persist than in Caucasians. The frequency of reactors who presented lesions by roentgen ray inspection increased with age.

The fourth study deals with the fate of persons exposed to tuberculosis in white and Negro families in a rural area of eastern Alabama. In Lee County they found that manifest tuberculosis begins earlier, runs a shorter, sharper course and more frequently ends fatally among Negroes than among white persons. They found that tuberculosis spreads from persons suffering with the disease to those in contact with them. This is true of persons whose exposure begins in adult life as well as of those first exposed in infancy, childhood and adolescence.

Die Brücke: Klinische Bilder in sechs Sprachen. Ein Hilfsbuch für Ärzte bei der Behandlung fremdsprachiger Patienten. Von Prof. Dr. Med., Dr. Phil., Dr. Med. Dent. Fritz Lejeune, Wien. Unter Mitarbeit von Dr. S. E. de Botton von der Medizinischen Fakultät der Universität Paris, Dr. Andresen da Costa-Lissabon, Dr. George Northcroft-London, Prof. Dr. T. Ollaro von der Med. Fakultät der Königl. Universität zu Turin, Prof. Dr. Fr. Oliver Rubió von der Medizinischen Fakultät der Universität zu Zaragoza. Cloth. Price, 18 marks. Pp. 690. Leipzig: Georg Thieme, 1941.

Here is an extraordinary contribution to popular health education in medicine and in languages. In parallel columns the author presents in German, English, French, Italian, Spanish and Portuguese the conversations which a doctor might have with his patient on a great number of common diseases. Physicians in each of the nations concerned have collaborated with him in the preparation of his text. He says "I hope with my collaborators that this book will become a real bridge for all the doctors of the six countries. It is designed to give a helping hand to the patient and the doctor in the consulting room, in hospitals in the foreign countries, on expeditions, on board ship, and last but not least in military hospitals." The conversations are ingeniously conceived but there seems to be a considerable wastage of space in making the conversations resemble the realistic which perhaps might better have been devoted to actual clinical material. For instance, the section on gallstones begins as follows:

Husband. Thank goodness that you have come, doctor, I cannot bear to see my wife suffer like this. She is nearly mad with the pain and has been vomiting almost pure bile.

Doctor. How did it actually happen?

Husband. Very suddenly, doctor. She went to bed perfectly well. About 1:30 a. m. she woke up complaining of a terrible pain in the stomach and back. I put on a hot fomentation and then gave her a brandy and some camomile tea. But she only became worse, and a little later the vomiting started. At one moment, she almost fainted. We did not want to disturb you, but finally we could not help it.

Again in discussing gout the doctor says laughingly:

But, Mr. Peterson, what about the gay evening? I am sure that you did not do yourself badly, and now you have to suffer for it.

Patient. Do not make bad jokes, doctor, but far better help me. After all you are no enemy to a glass of good port.

Thus the volume is both instructive and entertaining.

Textbook of Pediatrics. By J. P. Crozer Griffith, M.D., Ph.D., Consulting Physician to the Children's Hospital, Philadelphia, and A. Graeme Mitchell, M.D., B. K. Rachford Professor of Pediatrics, College of Medicine, University of Cincinnati, Cincinnati. Third edition. Cloth. Price, \$10. Pp. 991, with 220 illustrations. Philadelphia & London: W. B. Saunders Company, 1941.

This is a complete revision and rewriting of the book called "Diseases of Infants and Children," first published by these authors in 1933 and revised in 1937. Recognizing the great advances that have been made in many aspects of medical science, the authors have called on a number of specialists to aid them in the consideration of special topics, so that this edition represents essentially a system or symposium of pediatrics rather than the work of two authors. In order to condense the volume, the bibliography has been omitted, which, however, is available to those who want it from the National Research Council. Chapters have been added on some subjects, notably one on mental growth and development. By the use of distinguishing type and by a large amount of tabulation the authors have been able to produce a compact, authoritative and useful volume. If there is any criticism, it must apply to the rather poor printing of the illustrations, many of which are old. The reviewer paid special attention to several topics with a view to determining whether or not the considerations of diagnosis and treatment have been brought up to date and found in each instance that the contribution represented the latest available information. The book may be recommended, therefore, as a work suitable both to the student and to the practitioner for continuous study as well as for reference.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

ABSORPTION OF LIGHT BY SKIN

To the Editor:—The pigment cells of the skin absorb light. What happens to the energy which is bound to develop after this absorption? Is there any proof that this energy acts within the skin, for instance, liberating the loosely bound histamine? Could you refer me to literature on the subject of light and pigmentation? M.D., Missouri.

ANSWER.—Probably most of the energy transformed from the light being absorbed by pigment as well as other structures in the skin, and by the fluids such as the lymph and blood, is transformed into heat. Portions of this energy may be utilized for developing light of new wavelengths—fluorescence. Still other portions of this energy are utilized for chemical reactions; it is known that ultraviolet radiation may act as an oxidizing agent. It is probable that histamine is liberated in varying amounts. Some people develop urticaria on exposure to sunlight and others an erythema or severe dermatitis on exposure to light, which probably takes place with the release of histamine or histamine-like bodies.

References:

- Miescher, G., and Minder, H.: Investigation on the Phenomenon of Pigment Intensification, *Schweiz. med. Wchnschr.* 69:996 (Oct. 28) 1939.
Miescher, G., and Minder, H.: Pigment Darkening Caused by Long Ultraviolet Rays, *Strahlentherapie* 66:6, 1939.
Merkelbach, O.: Skin Pigmentation and Dopa-Melanin, *Radiol. Clin.* 8:13, 1939.
Kuske, Hans: Experimental Investigation on Photosensitization of Skin Through Vegetable Agents, *Arch. f. Dermat. u. Syph.* 178:112, 1938.

POSSIBLE ADENOPATHY FROM HAIR DYE

To the Editor:—A white woman aged 31 had a painful adenopathy in the postauricular, preauricular, posterior cervical, suprascapular and epitrochlear areas bilaterally and pain in the right upper quadrant of the abdomen. There were associated hemorrhagic ulcerations in the throat. There were a low grade fever, mild secondary anemia, and a white blood count and differential smear which were essentially normal. All of this apparently followed by one week the dyeing of the patient's hair with a substance called "Clairol." In about a month, with the use of reduced iron all symptoms disappeared. Two weeks ago the girl dyed her hair. Four days ago she complained of stiffness of both trapezius muscles. Examination revealed a return of the postauricular and posterior cervical lymphadenopathy. There is no fever, no anemia, no throat ulceration. What is the composition of "Clairol"? Do the symptoms suggest anything other than a reaction to the hair dye? What other tests may be carried out in addition to a biopsy of a gland? What other disease entities in addition to Hodgkin's disease, possible early leukemia and infectious mononucleosis, must be considered?

Horold J. Reese, M.D., Youngstown, Ohio.

ANSWER.—"Clairol" comes in two forms: "Instant Clairol" and "Progressive Clairol." The former dyes hair permanently in one application, while the latter is more in the nature of a tint. From information received from the manufacturers in 1934 it appeared that "Instant Clairol" contained a hair dye of the aniline derivative type. Judging by the advertising of the firm, some of the "Progressive Clairol" preparations apparently contain a similar substance but in more dilute form. The synthetic compounds most commonly used in hair dyes are para-phenylenediamine, paratoluylenediamine, and toluylenediamine. Medical literature abounds in descriptions of the application of these substances. It has been noted on numerous occasions to produce local dermatologic changes on application to the hair of the head or the eyelashes. Localized edema, erythema, vesicle formation, conjunctivitis and ulcerative keratitis are among the conditions seen. Local changes in the tissues of the scalp usually occur within twenty-four to forty-eight hours after the application of the dye, but delayed changes have been noted. Among fur workers using this agent attacks of an asthmatic nature are described. Several cases of systemic poisoning have been noted. In one there was an acute onset associated with severe cyanosis and prostration—symptoms resembling acute aniline poisoning. Two fatal cases have been independently reported in both of which the principal feature was jaundice due to a severe toxic hepatitis. An anemia, often macrocytic and with aplastic features, has been fairly constant in reported cases of systemic poisoning. Independent observers have also noted systemic

symptoms following the coincidental application of hair dye and "permanent wave" solutions. Toluylenediamine experimentally produces liver damage associated with jaundice. No specific reports of toxic effects from pyrogallol in hair dye have been recorded in the literature. This substance, under other circumstances, has been known to produce marked renal damage, methemoglobinemia and hemolysis of red cells.

The picture presented by this patient does not definitely fit any of the described clinical syndromes associated with hypersensitivity to aniline hair dyes. However, it must be remembered that these syndromes are by no means rigidly defined. Localized cervical and preauricular lymphadenopathy resulting from a possible toxic dermatitis of the scalp associated with anemia and right upper quadrant abdominal discomfort, occurring in close time relationship to the dyeing of the hair, should lead to a definite suspicion of the dyeing as an etiologic factor. The length of the symptom-free interval between the first and second dyeing is not stated, but the longer this healthy period the less one would suspect an underlying disease entity and the more one's attention would center on the dyeing. A patch test of the patient with the hair dye should be a helpful procedure. Since these agents may produce a toxic hepatitis, liver function tests may be of diagnostic value. If after a few weeks there is definite persistence of the lymphadenopathy, biopsy of a node is indicated. Persistence of lymphadenopathy with a normal peripheral blood picture would make a sternal puncture desirable. Heterophile antibody agglutination tests may be helpful in establishing a diagnosis of infectious mononucleosis.

References:

- Peters, H. R., and Sacks, M. S.: *Ann. Int. Med.* 12:2032 (June) 1939.
Baldridge, C. W.: *Am. J. M. Sc.* 189:759 (June) 1935.
Israels, M. C. G., and Susman, W.: *Lancet* 1:508 (March 10) 1934.

IDENTIFICATION OF INTRA-ABDOMINAL GAUZE SPONGE WITH ROENTGEN RAYS

To the Editor:—Is it often possible to make a diagnosis of the presence of a gauze sponge in the abdominal cavity by the use of roentgenograms? I recently heard some one say that a roentgenogram had shown the presence of a sponge of gauze, and I was rather reluctant to believe that such a diagnosis could be made with any degree of certainty.

M.D., Maine.

ANSWER.—A gauze sponge in the abdominal cavity cannot be visualized by ordinary roentgen examination or by fluoroscopic examination. Most surgeons attach a metal ring to any gauze napkins or gauze sponges which are introduced within the abdominal cavity. A roentgenogram of the abdomen or even fluoroscopic study will readily reveal the metal ring. If the gauze sponge is large its presence in the abdomen may be surmised by giving an opaque meal and discovering the characteristic displacement of intestinal coils away from the mass formed by the nonopaque sponge, when otherwise the coils of intestine would exhibit an undisturbed pattern. However, the same phenomenon would be produced by any kind of space-occupying mass, such as a pocket of pus or a tumor. In rare instances the presence of a foreign body has given rise to infection and the production of an external fistula. Injection of opaque oil with a little pressure into such a fistulous tract might visualize the gauze mesh of the sponge and thus help one to recognize it definitely as a gauze pad. A radiologist of a large experience in roentgen study of abdominal conditions, in answering an inquiry, replied that he had been called on to locate a possible forgotten sponge not over three times in thirty-five years of radiologic work. Evidently the accident is not a common one.

PERITONSILLAR ABSCESS AND TONSILLECTOMY

To the Editor:—What is considered the best treatment of peritonsillar abscess? I have heard of tonsillectomy as the treatment; it sounds radical to me. I should like to have you comment on this specifically. M.D., Kansas.

ANSWER.—The best treatment of peritonsillar abscess, in the opinion of a number of qualified observers, is incision and drainage. The use of sulfanilamide and allied remedies has not worked as well as hoped at first. Trousseau's maxim to the effect that nothing can abort the course of quinsy is probably as true now as it was on the day it was uttered.

Tonsillectomy for the cure of peritonsillar abscess has been recommended by a number of laryngologists, and several papers have been published, each with case reports. The general feeling still is that this is radical treatment, and most specialists would in all likelihood feel that it is not fundamentally good

surgical practice to remove tonsils in the presence of an infection of this character. There is, furthermore, the difficulty of inducing an effective local anesthesia and the undesirability of using a general anesthetic.

To this the proponents of the idea respond that in their experience there have been few or no complications. They say that, when an incision is made and spread to evacuate the peritonsillar abscess, the tonsil already to a large extent is enucleated. Tonsillectomy at a later period when healing and scarring have occurred is often difficult and carries the risk of hemorrhage, both primary and secondary.

It is likely that for a long time to come the more frequently used method of incision and drainage will remain the method of choice.

References:

- Levinger, S. May Tonsillectomy Be Performed During or Shortly After Acute Inflammatory Disease of the Tonsils? *Munchen. med. Wchschr* 77: 1666 (Sept. 26) 1930
Merica, F. W. Tonsillectomy as Cure for Peritonsillar Abscess, *Arch Otolaryng.* 25: 520 (May) 1937.
Canuyt, G., and Horning, T. Tonsillectomy in Acute Peritonsillar Abscess, *Paris med.* 2: 199 (Sept 5) 1931.

OSTEOID OSTEOMA

To the Editor.—A man aged 46 has had pain, tenderness and swelling localized on the mediadorsal aspect of the right wrist since January 1938. The family and personal history is noncontributory. Laboratory data and the Wassermann reaction are negative. There is no history of trauma. A roentgenogram taken in August 1940 revealed a calcified mass extending from the hook of the os hamatum and a slight narrowing of the corresponding carpometacarpal joint. The mass was subsequently removed and proved to be of an inflammatory nature (osteomyelitis). The hand was kept immobilized for five weeks, during which time the patient was free from symptoms. As soon as the cast was removed a slight swelling reappeared in the same area, followed by pain and tenderness, which seemed to increase in intensity and frequency. However, the patient is able to use his hand. Several roentgenograms showed only slight narrowing of the joint spaces without other pathologic changes. Clinically, the condition seems to take the same course as at the onset. I would appreciate suggestions as to further treatment, the value of roentgen therapy in subacute osteomyelitis, and any contraindications for roentgen therapy.

M D, New York

ANSWER—"Osteoid osteoma" is the descriptive term used by Jaffé in discussing a group of cases in which there were isolated lesions of the small bones of the hands or feet similar to that described in this query. These were formerly considered to be osteomyelitic and bacterial in origin and varied from the Garré type of sclerosing osteomyelitis of a long bone to the small proliferating lesion of a phalanx similar to that which involved a carpal bone in this patient.

Rarely have cultures from lesions such as these yielded bacteria, and Jaffé considers them to be slow-growing neoplasms.

The treatment has been surgical, but Jaffé has suggested the use of roentgen therapy as a logical substitute or adjunct in dealing with the localized osteoid masses

References.

- Jaffé, H. L. Osteoid Osteoma. A Benign Osteoblastic Tumor Composed of Osteoid and Atypical Bone, *Arch Surg* 31: 709 (Nov) 1935
Jaffé H. L., and Liehtenstein, Louis. Osteoid Osteoma. Further Experience with This Benign Tumor of Bone, *J Bone & Joint Surg* 22: 645 (July) 1940

LATE RESULTS OF COLLES FRACTURE

To the Editor.—What objective and subjective symptoms are present eight months after a Colles fracture is treated properly in a healthy man? When pushing with the upper extremities, what percentage of force is osseous and what percentage ligamentous? When pulling with the upper extremities what percentage of force is osseous and what ligamentous? Assuming that an adult has a Colles fracture and it is properly treated, what would account for hyperextension of the wrist, pain to active and passive motion (especially while in extension) and loss of sensation in distribution of the radial nerve below the site of fracture? I hope I have made myself clear. Please give an opinion.

M D., South Carolina

ANSWER—Neither objective nor subjective symptoms should be present in the wrist of a healthy adult man eight months after a Colles fracture has been adequately reduced and has united in good position.

No data have been found which pretend to estimate scientifically the relative strains on bones or ligaments in the push or pull effort for the upper extremities. When pushing with the upper extremities the greater force is exerted by the bones. When pulling with the upper extremities there is more strain on the ligamentous structures which hold the bones together. Hyperextension of the wrist of an adult following proper treatment of a Colles fracture may result from extensive injury to the anterior capsule of the joint.

Pain on active and passive motion may also be the result of incompletely healed injuries to the soft tissues, such as capsule and ligaments, to traumatic arthritis resulting from injury to the articular surfaces in the wrist joint or to callus which may form within in the wrist joint if the fracture line entered that articulation.

The radial nerve is primarily motor. The superficial ramus or sensory branch of the radial nerve may have been injured by the sharp edge of a fracture fragment or it may have become incorporated in and compressed by the callus.

INHERITANCE OF VITILIGO

To the Editor:—A man and his wife both have vitiligo. Neither can give a history of familial vitiligo. They wish children but fear that the children may also suffer from vitiligo. What chances are there that this may occur? The woman refuses to become pregnant unless she can have reasonable assurance that her children will not be afflicted

M D, California

ANSWER—The cause of vitiligo is obscure. It is presumably a trophoneurosis and is frequently associated with neurotic disturbances. In some cases there is evidence of hereditary influences. Recently Merenlander and Rywlin (*Acta dermatovenereol.* 24:583 [July] 1940) reported the occurrence of the disease in a grandmother, father and daughter. They stated that they had noted only seven instances of hereditary transmission of acquired vitiligo until 1933, and their case is the only once since. (Abstract by Wise and Sulzberger in the Year Book of Dermatology and Syphilology, 1940, page 269) Stelwagon (*Diseases of the Skin*, ed 9, Philadelphia, W. B. Saunders Company) states that "at times vitiligo is hereditary. It is undoubtedly to be looked upon as a neurosis and of more frequent occurrence in neurotic individuals."

On the basis of this evidence it is up to the physician to discuss with the parties the relative insignificance of vitiligo as compared to other stigmas that may occur in the newborn. With a simple condition like vitiligo, which is of only cosmetic consequence and has no serious constitutional significance, it is probably not important enough to avoid pregnancy if there is a great desire, on the part of both parties, to have children

DUODENAL ULCER AND BAROMETRIC PRESSURE

To the Editor.—A man has a duodenal ulcer. The fact has been confirmed twice by roentgen examination, the last time being three months ago. In clear weather, pressure over the upper abdominal region usually brings relief, immediately preceding a rain, no relief is obtained. He states that while working in a subbasement he may experience pain in the upper abdominal region, frontal headache, flushed face, a sensation of stillness over the forehead and cheeks, marked flatulence, hypermotility of the bowels and occasionally chills. He notes the time these sensations and symptoms appear and when they leave. On returning to "daylight" he always observes that these symptoms make their appearance immediately before the rain starts and, as the rain subsides, the unpleasant sensations disappear. Any explanation to account for these abnormal sensations will be appreciated.

Carl E. Pieck, M.D., Covington, Ky.

ANSWER—A definite explanation cannot be given for the symptom response this patient shows to weather change. Barometric pressure fluctuations and their resultant effects on tissue water content, are probably responsible, but the matter needs careful study under controlled experimental conditions before a definite answer can be given. Nervously unstable patients often suffer somewhat from this type of response to falling barometric pressure as a "low" center is approaching or passing. Those with habitual headaches or fainting attacks are particularly prone to suffer seizures at the time of such weather crises and to have least trouble during periods of rising pressure (clear, cool weather). People bothered with flatulence also often find their trouble worse during falling pressure periods. Ordinarily the barometric pressure changes from a falling to a rising phase either during or soon after the period of rain. Careful experimental study of pressure change effects in the future may yield interesting and useful information regarding the mechanism of man's response to weather changes.

MERCURIAL DIURETICS VALUELESS FOR SYPHILIS

To the Editor.—What, if any, is the antisiphilic value of the mercurial diuretics such as salyrgan? The patient that I have in mind has received several hundred intravenous injections of salyrgan in the past three years.

M D., Florida

ANSWER.—None.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 117, No. 10

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CHICAGO, ILLINOIS

SEPTEMBER 6, 1941

THE PEDIATRICIAN

HIS OBLIGATION TO THE STATE IN TIME OF WAR
CHAIRMAN'S ADDRESS

JULIUS H. HESS, M.D.
CHICAGO

When I first selected the subject for my talk, it was with the belief that it would be *opportune* to emphasize the place of the pediatrician in the nation and his local community, both in time of peace and in time of war. The rapidly changing events, however, lead me to place a limitation on the scope of my presentation. In the peace time that obtains in the United States at the moment, the peace that may only be the prelude to war, our obligation is clearly one of putting ourselves at the service of our nation. The least we can do for the children to whom we have tried to give the benefits of our knowledge in the past is to preserve for them the type of government we hold to be best, one in which freedom, liberty and justice are available to all.

We are living in a period in which every day brings with it a new interpretation of our responsibilities to the nation. Never has there been a conflict between nations in which the principles of humanitarianism have been so completely subordinated to the lust for conquest and power. Neither the babes in arms, the mother who bore them nor the bedridden hospital patients are spared in today's calculated plans for destruction. Barbarian tribes sometimes carried their women and children in the wake of the march toward battle, but only today has it come to pass that we slaughter the innocent by bringing fire and destruction into their homes in order to create paralyzing fear and bring morale to the zero point.

In a situation such as this, every man and woman has a place of responsibility to fill. Not every one will have the satisfaction of wearing a uniform or marching to martial music; nevertheless his and her services can be of the greatest importance in keeping bright and clear the road our country is to follow. The types of service that we can render and which will leave their impress on the history of our time are too many and too varied to bear enumeration. The pediatrician has broad training, knowledge and skill to offer his country, especially in the fields of general medicine, contagious diseases and nutrition. I know that he stands willing to give to his people the fruits of that wisdom. His contribution will be of high quality, whether it be in the field, the hospital, his own community or such place to which he may be assigned at home or abroad.

We have in this war seen the success attributable to a long period of careful and intensive planning in the matter of the organization of all possible resources. As physicians, our special province lies in planning for the health and morale of the army and our civilian population. Such plans must of course be coordinated by the various branches of our federal government so that they take their place in the general scheme. The American Medical Association has already proved of great assistance in attempting to classify all physicians in the United States in order that they may be grouped in that service for which their training, experience and aptitude best fit them. Most valuable aid is being rendered by the state and county medical societies in their services to the draft boards and other state and local activities related to military service. The American Academy of Pediatrics through its national, regional and state activities has much to offer to public health in the military sense as well as to those in civilian life.

The physician will be called on to render services on the battlefield, in camps and at home. The requirements of the Army and Navy have to a great extent changed since the last World War, in that there has been a gradual expansion of the Medical Reserve Corps. Furthermore, many of our younger physicians have received medical military instruction as a part of their undergraduate and medical education.

Let us now, with some justification, attempt to analyze the part that each one of us can play to advantage in this struggle for a natural existence in a democratic country. The medical student has now been granted an opportunity to finish his medical education and to enhance his experience by one full year of internship. The intern with his placement in the deferred class, implying special consideration for his future service, should, and to a great degree must, develop a sense of obligation which carries with it a necessity for sacrifice of time and energy. Even during his hospital months, local induction boards and boards of appeal offer opportunity for voluntary service or, if need be, compulsory service.

For the young man ready to begin practice, there should be no choice but that of filling some station of active duty, be it in the field or sharing in the conserving of the health and morale of the people at home. It is not improbable that he will be drafted for such services, should the period of the war be a prolonged one. For the young man who is established in practice and beyond the conscription age, the decision must lie within himself. There may be a real sacrifice involved for him and his family which will lead to a complete change in the pattern of all their lives. His decision can be only a voluntary one, but in many instances it will be his emotions that will prompt his final action.

To the older group among us who are still physically and mentally capable there comes a real challenge. In

their maturity and from the depth of their experience they have much to offer in whatever position they may seek to serve. It must naturally be expected that many who may desire to join up with the active services must remain at home to carry on educational or governmental services in the community.

The House of Delegates of the Illinois State Medical Society at its annual meeting, May 22, 1941, passed a resolution instructing its delegates to the American Medical Association that women physicians be allowed to share all the privileges of men in services to the Army and Navy. This action underlines the conviction of us all that it will be every citizen's duty and privilege to serve his nation to the full extent of his ability in the coming crisis.

THE PEDIATRICIAN IN THE ARMY

As a senior medical student in 1898 I experienced the enthusiastic response to the call of the Army at the beginning of the Spanish American War. None of my classmates ever reached the field of battle, but several died in Army hospital camps.

The following editorial, appearing in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* on March 25, 1899, should make us wonder whether we have profited from the past:

The mistakes and serious blunders that were made can be almost invariably traced back to the unprepared condition in which we entered into hostilities. The public that enthusiastically demanded war with Spain was one that knew nothing of what war really is; the volunteers who offered their services so freely had no idea of the realities that they were to encounter; the army bureaus, inadequate as they were, were largely manned by men who had grown up in the traditions of thirty-odd years of peaceful red tapeism, and their reinforcement to meet the emergency was necessarily with inexperienced men.

I am certain that there can be only agreement among us as to the profound realities presented by our present situation as a potential belligerent in this second World War. The problem to be solved by and for us is how and where we are to participate in the military or public activities brought about through war. Resolutions passed by the regional components of the American Academy of Pediatrics point to some of the considerations which should with profit be emphasized in the assignment of pediatricians to duty:

To the Surgeon Generals of the United States Navy, United States Army and Committee on Defense:

WHEREAS, Pediatricians are eager to serve in the National Defense Program to the best interest of the federal government; and

WHEREAS, The pediatrician occupies an unusually favorable position, by virtue of his training and experience, with regard to the management of nutritional problems and the problems concerned with sanitation and contagious disease control; therefore be it

Resolved, That the Surgeon Generals of the United States Army and Navy be respectfully urged to outline the objectives to be fulfilled in the Army and Navy by the pediatricians of the nation individually and collectively; and that furthermore

In the formulation of such a policy for the service, both public and private, of pediatricians to the nation, that their exceptional training in nutritional problems, the care of the contagious diseases and the supervision of child welfare in the nation be given special consideration.

It was my experience at the time of my first assignment in the first World War, to be stationed at Fort Riley, Kansas. Our recruits came largely from the four

states of Louisiana, Mississippi, Arkansas and Oklahoma, and the greatest number of them had lived in villages and sparsely settled rural districts. It was not surprising to find that a very high percentage of these young men had not been exposed to or at least had not experienced most of the acute contagious diseases. Therefore, when exposed to measles, mumps, scarlet fever or diphtheria in the crowded camps they contracted these diseases in their most severe form. Secondary complications developed, with an exceptionally high mortality, due mainly to hemolytic streptococcus infection. When I arrived in camp there were 122 cases of meningococcic meningitis in the wards, and there was a shortage of specific serum. The mortality rate was 25 per cent. At one time we had 17 cases of smallpox among our poorly protected Southern soldiers in our isolation unit.

Dr. Philip M. Stimson, in the May 1941 issue of the *Journal of Pediatrics* reported the following estimated number of cases among the acute contagious diseases in the U. S. Army of 4,000,000 men during the first World War:

Measles, 98,000 cases with 2,000 deaths.

Diphtheria, 10,000 cases with 177 deaths.

Mumps, 230,000 cases.

These figures do not tell us how many soldiers were incapacitated for future active military service.

With our newer therapy, including the various drugs of the sulfonamide group and the type specific serums, it is our hope that we shall never again suffer a similar pandemic of influenza, and that all types of pneumonia may be more readily brought under control and complications decreased.

In any event, even the few figures I have given should be sufficient to support the contention that the Army and Navy have a wide field of practice for the pediatrician.

THE PEDIATRICIAN IN THE CARE OF THE CIVILIAN POPULATION

In this war, political and economic hostilities have become an integral part of the invader's plans. The eventual effect that this will have on the noncombatants not only during the war but also in the peace that will follow is difficult to evaluate in full measure. The decreasing birth rate, increasing death rate, lowering of the standard of living of the invaded nations, appalling destruction of adult life, and the incapacitating of men and women are but a few of the immediate results of general total warfare. Those of us who may not participate in active service in the Army and Navy can therefore contribute much to our nation in the prevention of morbidity and mortality among noncombatants during and after the war.

In the present war, epidemics experienced in the different countries have largely been influenced by such factors as the disease prevalent in the particular area and the constitutional and nutritional condition of its people. Disease is becoming widespread in those European countries under the domination of the victorious army, which provides first and foremost for its own soldiers and remains indifferent to the food needs of the inhabitants. In many instances, especially in those disrupted and demoralized communities where a low food supply has been combined with a complete lack of provision for sanitation, pestilence is not slow in appearing.

We can learn much from the experience of England in its effort to increase the chances for safety of its children. On the face of it, the answer to their problem at first appeared to be a hurried evacuation of children from cities and their dispersion among the rural sections of the population. However, the results obtained during the first six months after evacuation of children, some accompanied by their mothers, into the rural areas showed that most of the mothers and at least one half of the children had returned to their homes. This reflux added to the difficulties of readjustment for the health authorities of both the evacuating and the reception areas. Many children adjusted themselves to their new surroundings quite readily but others were unexpectedly sensitive. As an English child psychologist has pointed out: "Evacuees are human beings. 'Being billeted' involves some delicate adjustments of human relationships."

The dangers inherent in close contacts, with the ever prevalent tendency to development of epidemics, is even greater among infants and children than in an army. In order to be successful, evacuation must have the cooperation and early consultation of the authorities of both evacuating and reception districts. This applies to joint sessions of pediatricians, psychiatrists, administrators, child psychologists, nurses, in fact all who can contribute from their experience to the program. It is here that the state and county medical societies with their compact organizations can be of great assistance. The pediatrician, because of his over-all perspective of the child, should expect to take a leading part.

Only by advance planning and outlining of the place to be filled by each pediatrician in army, navy or civilian activities will the best interests of the nation be served. Even when the patriotic physician knows that his talents can best be utilized at home, it is difficult for him to stand by waiting for such a position to be found for him while his colleagues appear in uniform. All uncertainty and doubt could be avoided if his services were planned for in advance of an emergency and he was assigned definite responsibilities. At the same time, such a provision would assure a more efficient and integrated system of civilian care.

Should it come to pass that we of the United States are spared the sacrifices of battle, we should be thankful that we have had these lessons in integrating our experience and talents. If it becomes our lot to enter into active participation in the present war, whether our country is to be found among the victors or among those who suffer defeat, ultimately disease will gain the final victory. Illness and pestilence will thrive long after the last gun has spoken, and we must be prepared to face and minimize the serious consequences.

We all realize that we are leaving a greater burden to be carried by the future generation than the share which we ourselves are called on to assume. Let us at least remember our responsibility to fortify the next generation so that they will have the physical and mental courage to take up where we leave off. And even though we are not leaving the best of worlds for our children, let us at least have the solace of knowing that we are walking into a war so that the world in which they must live will be one that will still have some remnants of tolerance, democracy and humanitarianism.

104 South Michigan Avenue.

CONCEALED RUPTURED INTER- VERTEBRAL DISKS

A PLEA FOR THE ELIMINATION OF CONTRAST
MEDIUMS IN DIAGNOSIS

WALTER E. DANDY, M.D.

BALTIMORE

In 1929 I¹ reported the first 2 cases of ruptured intervertebral disk in which operation was performed during the preceding year. It was recognized that they were of traumatic origin; that the trauma was relatively slight and with minor strains the symptoms flared up anew after a quiescent period. Both of these disks were localized by injections of iodized oil which disclosed blocks in the lumbar canal. It was suggested at the time that the lesion might explain many cases of sciatica. Both of these patients have since remained well. In a little more than a decade this has become the most frequent lesion encountered by neurosurgeons.²

Mixter³ went a step further and localized the lesion before the protruding disk had produced a total block in the spinal canal. This diagnosis was made by a localized filling defect in the solid mass of iodized oil (5 cc.) injected into the spinal canal. Until recently iodized oil has continued to be the routine method of detecting these little localized protrusions. However, the fact that iodized oil is a permanent deposit in the subarachnoid space (unless removed subsequently) and passes freely into all the fluid containing spaces in the cranial chamber has remained a matter of serious concern, even though there is no absolute proof that it does actual harm. The roentgenograms are enough to deter one from its use if it could possibly be avoided; and its presence is a good excuse for medicolegal action, particularly if no disk was found.

In 1937 Reichert⁴ first substituted air for iodized oil as a contrast medium and in 1939 reported⁵ 35 cases with excellent diagnostic results. He, however, still retained iodized oil as a check in the doubtful cases. This method was quickly adopted by many others and is used either exclusively (Love) or with iodized oil subsequently when in doubt. Air shadows are by no means so striking as iodized oil shadows, but with excellent plates and the highest skill in their interpretation they can be almost as satisfactory.

The next great diagnostic advance was made by Semmes.⁶ He reported 16 cases that were diagnosed, without any contrast medium whatever, solely by history and neurologic examinations. And among these were 4 cases in which iodized oil had been injected by others and failed to disclose a disk. Spurling⁷ stated that many of the disks could be diagnosed on clinical

1. Dandy, W. E.: Loose Cartilage from Intervertebral Disk Simulating Tumor of the Spinal Cord, *Arch. Surg.* 19: 660 (Oct.) 1929.

2. The remarkable anticipation of this lesion by J. E. Goldthwait (The Lumbosacral Articulation, Boston M. & S. J. 164: 365 [March 16] 1911) has never received the credit it deserves.

3. Mixter, W. J., and Barr, J. S.: Rupture of the Intervertebral Disk with Involvement of the Spinal Cord, *New England J. Med.* 211: 210 (Aug. 2) 1934. Mixter, W. J.: Rupture of the Lumbar Intervertebral Disk, *Ann. Surg.* 106: 777 (Oct.) 1937.

4. Reichert, F. L., in discussion on Barr, J. S.; Hampton, A. O., and Mixter, W. J.: Pain Low in the Back and "Sciatica," *J. A. M. A.* 109: 1270 (Oct. 16) 1937.

5. Reichert, F. L.: The Injection of Air for Localization of Lesions in the Spinal Canal—Pneumomyelography, *West. J. Surg.* 47: 297 (June) 1939.

6. Semmes, R. E.: Diagnosis of Ruptured Intervertebral Disk Without Contrast Myelography and Comment upon Recent Experiences with Modified Hemilaminectomy for Their Removal, *Yale J. Biol. & Med.* 11: 433 (May) 1939.

7. Spurling, R. G., in discussion on Love.²

studies alone. Love and Walsh⁸ observed that without contrast mediums the diagnostic error was less than 0.5 per cent.

One of the most important disclosures in this diagnostic field has been the very high incidence of protruding disks at the fourth and fifth lumbar interspaces. Love in 1938 found 87 per cent in these two disks. In 1940 two papers appeared in the same issue of the *Archives of Surgery* by Love and Walsh⁸ and by Spurling and Grantham,⁹ in both of which 96 per cent of all the lesions were found at the fourth and fifth lumbar disks and they were fairly evenly divided between these two locations. With such a selective localization of this lesion, contrast mediums are hardly necessary in the diagnosis.

Three important surgical advances have contributed greatly to the patient's welfare: (1) The substitution of a unilateral approach for the previously used bilateral removal of one or more laminae (Semmes,¹⁰ April 6, 1939 and Love¹⁰); (2) both Semmes and Love still further reduced the amount of bone removed by cutting away only the edges of the laminae contiguous to the disk and thus maintaining the integrity of the laminal arch; and finally (3) Love⁸ removed many of the disks without sacrificing any bone. Ample room is usually obtained between the laminae after removing the ligamentum flavum.

My purposes in this communication are twofold: (1) to enter a plea for the elimination of all forms of contrast mediums for localization of vertebral disks and (2) to present observations on a "concealed" type of ruptured intervertebral disk that cannot be disclosed by intraspinal injections.

The reasons for avoiding spinal injections of any kind are that (1) they are unnecessary, (2) they may be misleading, (3) they add to the patient's discomfort and finally, (4) the permanent deposit of iodized oil in the brain and spinal cord is avoided. In other words the diagnosis of a ruptured disk and its location can be much better made solely by the history and examination, and by so doing one relieves the patient of discomfort and possible after-effects. Not even a lumbar puncture is necessary.

Since it has now been demonstrated that over 96 per cent of all lumbar vertebral disks are at the fourth and fifth lumbar spaces and since the unilateral approach is adequate to find the lesion whether it is at the fourth or the fifth disk, it only remains to make the diagnosis of a lumbar vertebral disk in order to disclose and remove it.

During the past eight months I have removed 37 vertebral disks; 29 of the patients had no spinal injection of any kind and a disk was found in each. Two had had iodized oil injections elsewhere (1 was operated on) with negative findings. In 6 of the 37 cases I had injected iodized oil (1.5 cc.), in 3 of which there were no positive findings and in 3 the protrusion showed distinctly. It is now clear that in none of these 8 cases was the iodized oil needed, and in 5 of them the operation would not have been made had the iodized oil been depended on for the diagnosis. At the present time the iodized oil test would not be made in any of these cases.

How can the diagnosis of a ruptured vertebral disk at the fourth and fifth lumbar interspaces be made with assurance? The diagnosis is made on low midline lumbar backache plus pain down the back of one or both legs, the pain is intensified by coughing and sneezing, and the pain must be recurring and not continuous. When this simple story is obtained there is no other lesion that need be considered. There may or may not be diminution of the achilles reflex or sensory or motor loss in the distribution of the fourth or fifth lumbar or first sacral nerve.

The history of trauma, which is always the cause, may be difficult to elicit and need not be obtained. The injury is usually a minor one, such as a heavy lift, a wrench or a sudden movement. I can't recall having seen a protruding disk after a severe back injury. The history of recurring pain is essential to the diagnosis and in the differential diagnosis from psychogenic backaches, which are always present.

There isn't any positive way by which the differentiation between ruptures of the fourth and fifth disks can be made with certainty before operation. A diminished achilles reflex suggests that the lesion is at the fourth, though with this finding it may still be at the fifth disk. (Spurling thinks it is evidence of a fifth disk rather than the fourth.) But the operative exposure permits exploration of both disks after removal of both ligamenta flava if necessary. Semmes¹¹ operates under local anesthesia and says that pressure with the forceps on the ligamentum flavum over the disk will induce the original pain, whereas pressure on the other will not. This may well be a decided advance.

In none of the 29 cases in which operation was performed without contrast mediums in the spinal canal has even a lumbar puncture been done. The presence of increased globulin in the cerebrospinal fluid has been regarded as an important diagnostic sign of ruptured disk, but I regard the clinical story so indicative of this lesion that I prefer not to subject the patient to the discomfort of a lumbar puncture. Roentgenograms of the spine are rarely helpful in diagnosis. Only once have I seen roentgenograms of value, and in that case a corner of the bone was chipped off and dislocated posteriorly.

Can the diagnosis of a ruptured disk always be made unequivocally? The answer is no, but the percentage of error should be very small. During the same period of seven months I have performed four negative explorations. All of these were pure explorations, in three of which iodized oil had been injected and gave negative results. In 2 of these cases I felt certain that there was no disk because the pain was continuous, but in both the diagnosis of a ruptured vertebral disk had been made elsewhere and I consented to explore the region to clear the atmosphere. The other 2 with negative iodized oil injections were patients of Dr. George E. Bennett; in both of them I still thought a disk was present but found none. I am not sure that these may have been examples of the "concealed" disks that have since been found and will now be discussed.

"CONCEALED DISKS"

A concealed disk doubtless explains many negative explorations. There are ten of them in this series (28 per cent), eight of these in the past two months. The disk bulges so slightly that it would never be disclosed by iodized oil or air injections into the spinal canal

8. Love, J. G., and Walsh, M. N.: Intraspinal Protrusion of Intervertebral Disks, *Arch. Surg.* 40: 454 (March) 1940.

9. Spurling, R. G., and Grantham, E. G.: Neurologic Picture of Herniations of the Nucleus Pulposus in the Lower Part of the Lumbar Region, *Arch. Surg.* 40: 375 (March) 1940.

10. Love, J. G.: Protruded Intervertebral Disks, *J. A. M. A.* 113: 2029 (Dec. 2) 1939.

11. Semmes, R. E.: Personal communication to the author.

and will be found at operation only by a careful inspection beneath the dura. The protrusion has been at or close to the midline beneath the cord in 6 and to the side in 4. They have been bound to the emerging spinal nerve by fairly firm adhesions. The spinal ligament over the involved disk is definitely thicker than normal. The slight protrusion is distinctly softer to touch than a normal disk and gives a definite sense of fluctuation to the forceps. When the covering ligament is incised a large sequestrum of cartilage does not protrude, but with almost no pressure the forceps sinks deeply into the intervertebral space—the certain test of a defective disk (the forceps cannot sink into a normal disk). As the forceps is withdrawn a soft mushy brownish material clings to the blades, and with a curet more of this material can be obtained from the cavity in the depths of the disk. At times small pieces of cartilage can be obtained in this way, but the material is reddish brown instead of the pearly white sequestrum that obtains in the protruding elevated disk with a definite sequestrum. When placed under the microscope the material contains remains of cartilage cells but in a much more disintegrated matrix than in the fairly normal looking cartilaginous sequestrum in the protruding disks. There are no signs of inflammatory process in the gross or under the microscope.

From time to time in the past I have encountered this type of disk, i. e. without a well defined sequestrum. The results following the opening of these flat disks have been just as good as when a large sequestrum has been removed, probably because the incision provides a vent for the subsequent gradual escape of the contained injured disk. I am confident that the same material is present in the depths of the disk, even when a large sequestrum is found, and that the opening of the cavity is essential for a cure. Always the forceps will fall without pressure into this central cavity. Three of these concealed disks had had iodized oil (one elsewhere) with negative results, and one had been operated on in another hospital with negative findings. The symptoms of these concealed disks are precisely like those of the protruding ones; they cause root pains because they are adherent to the nerve and not from mechanical pressure on them.

The disclosure of this concealed type of disk is an additional reason for giving up iodized oil, air or other tests. They can't possibly show the lesion, and with negative evidence the patient may well be deprived of operative cure and passed along as neurasthenic.

The question has repeatedly been asked Has not the diagnosis and treatment of ruptured intervertebral disks been greatly overdone and are not the findings at operation often so equivocal as to be merely a cloak for the operator's mistake? There is no question that many mistakes have been made and are still being made; that is natural for a field in its infancy. At the present time I am confident that with a knowledge of the "concealed" disks the percentage of error in the hands of skilled neurosurgeons will be very small. And I am equally confident that instead of being overdone the surface has only been scratched; that the overwhelming percentage of cases with recurring attacks of low back pain plus sciatica in one or both legs will be found to be vertebral disks. Love, who has done so much to develop this field of surgery, has had over 1,000 cases. There are, of course, many cases of constant pain that are not due to vertebral disks, and most of them are of psychogenic origin; they will fail to

give exacerbation of pain on coughing or sneezing—a sign that I regard as pathognomonic of a disk or possibly a tumor. Doubtless there are some disks also among the constant backaches, even when there is no increase of pain on coughing or sneezing. These cases for the present must be classified separately. It is largely from this group that the negative spinal injections and operative exposures have been made and have cast some discredit on the whole subject. While it is worth while to cull a few disks from this large group, the diagnostic and operative efforts will be avoided by the most discriminating surgeons and the efforts confined to those cases that show reasons for doubting the psychologic diagnosis. But if cases in this group are to be considered as potential disks, and in cases of sufficient doubt further diagnostic efforts are to be made, my very strong feeling is that a unilateral exploration of the fourth and fifth disk areas is much preferable to intraspinal injections. The former exhausts the diagnostic possibilities, the latter, if negative, still do not exclude this lesion.

One other type of lesion must always be considered in the differential diagnosis, namely tumors of the spinal cord. Love has told me that this is his main reason for using air injections. It is true that occasional disks may be located at the third lumbar interspace, or even higher in the thoracic or cervical regions, and occasionally there may be two disks at different levels. However, the symptoms are sufficiently different to make one doubt the typical lesion at the fourth and fifth disks. At the third lumbar disk the pain will be in the front of the thigh instead of the back of the leg. And with higher disks the symptoms will scarcely be different from those of a tumor; most of them are found when tumors are suspected. It is only with the typical story of a disk at the fourth or fifth (and again these are 96 per cent of the total) that I eliminate the intraspinal diagnostic tests. For the occasional case in doubt I still prefer a small injection of iodized oil (usually 1 cc.), which is carefully studied under the fluoroscope. Although I dislike iodized oil it still remains a necessary test in localizing tumors of the spinal canal. Air shadows are never so good and the air is soon lost; iodized oil remains and can be restudied. With use of the fluoroscope the small amount of iodized oil is just as serviceable as the large quantities that fill the entire lumbar canal.

Many writers advise spinal fusion following removal of a ruptured disk, some almost routinely, others largely in industrial cases in which heavy work must be resumed. I have never felt this to be advisable. So far I have not had a recurrence, and in 500 cases Love reported only 1 per cent of recurrence. Where compensation is a factor a fusion will not diminish the complaints, and in cases with hard labor ahead a rest of three months is probably adequate protection.

SUMMARY

1. The overwhelming percentage of vertebral disks can be diagnosed and localized by the history and examination alone, and all accessory diagnostic tests (even lumbar punctures) can and should be avoided.
2. "Concealed" vertebral disks doubtless explain many of the negative explorations for this lesion.
3. If the diagnosis is questionable, an exploration of the region is preferable to spinal injections of air or iodized oil.

Johns Hopkins Hospital.

THE TREATMENT OF PNEUMOCOCCIC
PNEUMONIA WITH SULFADIAZINE

HARRY F. DOWLING, M.D.
CLARENCE R. HARTMAN, M.D.
SAMUEL J. SUGAR, M.D.
AND
HARRY A. FELDMAN, M.D.
WASHINGTON, D. C.

Extensive clinical use has established beyond doubt the value of sulfapyridine and sulfathiazole in the treatment of pneumococcic pneumonia. Among the many similar compounds that have been synthesized, one in particular has shown sufficient promise in preliminary studies to be worthy of clinical trial. This compound, sulfadiazine (2-sulfanilamidopyrimidine) is the pyrimidine analogue of sulfapyridine, synthesized by Roblin and his associates¹. Feinstein and his co-workers² administered sulfadiazine to various laboratory animals and obtained higher average blood levels than after the administration of similar dosages of sulfapyridine or sulfathiazole. The therapeutic effects with sulfadiazine were equal or superior to those with sulfapyridine or sulfathiazole, and the toxic reactions were less frequent. Studies on the absorption and excretion of sulfadiazine in human beings have been made by several groups of investigators³ who agreed that higher levels of the drug in the blood were obtained and that these persisted over a longer period of time than after similar dosages of sulfapyridine or sulfathiazole. Toxic effects from sulfadiazine were less frequent than after the administration of either of the other two drugs.

Flippin, Rose, Schwartz and Domm⁴ reported 11 deaths (12.6 per cent) among 87 patients with typed pneumococcic pneumonia as compared to 16 deaths among 86 patients treated with sulfathiazole. Finland, Strauss and Peterson⁵ gave sulfadiazine in 178 similar cases and observed a 10.7 per cent mortality rate. They felt that the results in pneumococcic pneumonia were comparable to the best that they had obtained with sulfapyridine or sulfathiazole.

During the period from Dec. 15, 1940 to June 15, 1941 all adult patients with pneumococcic pneumonia

in the wards of Gallinger Municipal Hospital were treated with sulfadiazine whenever the drug was available.⁶ The sputums of all patients were typed for pneumococci, and one or more blood cultures and roentgenograms of the chest were obtained on each patient. Estimations of the sulfadiazine content of the blood were made at least once a day while the drug was being given. At the onset of the study an initial dose of 2 Gm. was administered by mouth, followed by 1 Gm. at four hour intervals until clinical improvement occurred. The drug was discontinued after the temperature had been normal for three or four days. Later in the study an initial dose of 4 or 6 Gm. was used, followed by 1 Gm. every four hours as before. A few patients were treated with a single dose of 6 Gm.

RESULTS

A total of 115 patients with pneumococcic pneumonia were treated (table 1). There were 13 deaths (11.3 per cent), 3 of which occurred within twelve hours and 1 within twenty-four hours of the time treatment was begun. Pneumococci were cultured from the blood stream of 17 (14.8 per cent) of these patients. Among the bacteremic patients 5 (29.4 per cent) died, as compared with 8 deaths (8.2 per cent) among 98 non-

TABLE 1—Pneumococcic Pneumonia Treated with Sulfadiazine

Type	All Cases		Bacteremic Cases		Cases Treated in First Four Days	
	Number	Died	Number	Died	Number	Died
I	35	2	4	0	19	1
II	4	0	0	0	4	0
III	9	3	3	1	5	1
IV	4	0	1	0	1	0
V	3	0	0	0	1	0
VI	4	0	1	0	3	0
VII	16	2	2	1	7	0
VIII	5	0	1	0	3	0
Other types	35	6	3	2	18	2
Total	115	13 11.3%	17	5 29.4%	64	4 6.3%

bacteremic patients. Sixty-four patients received the initial dose of sulfadiazine within the first four days of the disease. Four of these patients (6.3 per cent) died, while there were 9 (17.4 per cent) deaths among the 51 patients whose treatment was begun on the fifth day of the disease or later.

Sixteen patients received serum in addition to sulfadiazine, usually on the first or second day after administration of the drug was started. Most of these patients were in the older age groups and were treated because the outcome appeared to be uncertain on drug treatment alone. Two of these patients died, both of whom received only 80,000 units of serum. Bacteremia was present in 4 patients of this group, none of whom died.

In table 2 the mortality rates are shown in relation to the ages of the patients and the number of lobes involved. There were no deaths in the age group from 12 to 20 years, but from that point on the mortality rate increased progressively up to 50 per cent for the patients over 70 years of age. The death rate was higher among patients with two or more than two lobes involved (16.7 and 12.5 per cent, respectively) than among those with only one lobe involved (9.1 per cent).

The response of the patients according to the dosage of the drug is shown in table 3. The level of free sulfadiazine in the blood during the first twelve hours of

From the Health Department of the District of Columbia, the Department of Medicine, George Washington University School of Medicine, and the Gallinger Municipal Hospital.
Cooperation was given by Drs G C Ruhland, J G Cumming and J E Noble of the Health Department of the District of Columbia and by the resident staff of Gallinger Municipal Hospital. Technical assistance was given by Miss Ruth Mayer, Miss Emily Godfrey and Mr Norman E Yongue.
1 Roblin, R O, Jr, Williams, J H, Winick, P S, and English, J P. Chemotherapy. II Some Sulfanilamide Heterocycles, J Am Chem Soc 62:2002 (Aug) 1940.
2 Feinstein, W H, Williams, R D, Wolff, R T, Huntington, Evelyn, and Crossley, M L. The Toxicity, Absorption and Chemotherapeutic Activity of 2 Sulfanilamidopyrimidine (Sulfadiazine), Bull Johns Hopkins Hosp 67:427 (Dec) 1940.
3 Plummer, Norman, and Ensworth, H K. Absorption and Excretion of Sulfadiazine, Proc Soc Exper Biol & Med 45:734 (Nov) 1940. Reinhold J G, Flippin, H F, Schwartz, Leon, and Domm, A H. TI pyrimidine 106 (Jan) and Finlanc diazine (2).
4 Flippin, H F, Rose, S B; Schwartz, Leon and Domm, A H. Sulfadiazine and Sulfathiazole in the Treatment of Pneumococcal Pneumonia: A Progress Report on 200 Cases, Am J M Sc 201:385 (April) 1941.
5 Finland, Maxwell, Strauss, Elias, and Peterson, O L. Sulfadiazine: Therapeutic Evaluation and Toxic Effects on Four Hundred and Forty Six Patients, J A M A 116:2641 (June 14) 1941.
6 Sulfadiazine was obtained through the courtesy of Drs W G Malcolm and D A Bryce of the Lederle Laboratories, Inc.

treatment was in general proportional to the amount of the initial dose. In spite of this fact there was no difference in the elapsed time from the initial dose of sulfadiazine until the temperature fell and remained below 101 F., regardless of whether the initial dose

TABLE 2.—*Mortality Rate in Relation to Age of Patients and Number of Lobes Involved*

Age Group	Number of Cases	Number Died	Per Cent Died
12-20.....	17	0	0
21-30.....	29	1	3.4
31-40.....	30	4	13.3
41-50.....	19	1	5.3
51-60.....	10	2	20.0
61-70.....	8	4	50.0
Over 70.....	2	1	50.0
Number of Lobes Involved			
1.....	77	7	9.1
2.....	30	5	16.7
More than 2.....	8	1	12.5

was 2, 4 or 6 Gm. Four of the 7 patients who received a single dose of 6 Gm. responded with a rapid drop in temperature, while the temperature of 3 patients remained high and the symptoms unabated for more than twenty-four hours. Two of these required further sulfadiazine therapy.

If all the cases are considered, irrespective of dosage, it will be seen that the temperature fell in 39.1 per cent of the group within twenty-four hours of the beginning of treatment while in 29.6 per cent the temperature did not fall until after twenty-four hours had elapsed. The 23 remaining patients who recovered (20 per cent) either had a drop of temperature within three hours of starting therapy or received serum before a drop in temperature took place.

We tested the blood serum of 71 patients (obtained before treatment was commenced) for the presence of the soluble specific substance of the infecting pneumococcus, according to the method of Bukantz and de Gara.⁷ The polysaccharide could not be demonstrated in the serum of 66 patients (table 4), among whom 3, or 4.5 per cent, died. There were 2 deaths (40 per cent) among the 5 patients in whom the specific soluble substance was detected.

TABLE 3.—*Relation of Dosage to Outcome*

Dose (Gm.)		Average Free Blood Sulfadiazine Levels, Mg./100 Cc., at			Temperature Dropped to 101 F. in		Other Cases	Died	Total
Initial	Every 4 Hrs.	3 Hrs.	6 Hrs.	12 Hrs.	4-24 Hrs.	Over 24 Hrs.			
2	1	1.4	4.1	4.8	17	2	5	1	25
4	1	2.5	4.5	6.5	4	11	3	4	22
6	1	3.5	4.9	5.2	18	15	12	6	51
6	..	4.8	5.6	6.0	4	3	0	0	7
Irregular.....	...	...	...	...	2	3	3	2	10
All cases.....	...	...	...	...	45	34	23	13	115
Percentage.....	...	...	...	...	39.1	29.6	20.0	11.3	100

Complications of the pneumonia occurred in 6 patients. Three of these had empyema. Two recovered completely following frequent aspirations, while 1 recovered after thoracotomy. One patient had fibrinous pericarditis and 1 had thrombophlebitis. Both recovered. The only patient to die from a complication had a type XIV pneumococcus pneumonia and endocarditis.

7. Bukantz, S. C., and de Gara, P. F.: The Detectability of Pneumococcal Capsular Polysaccharide and Antibody in Blood, Broth and Saline Solution (Optimal Concentration of Antigen and Antibody), *J. Immunol.* 30:195 (Sept.) 1940.

Since it was impossible to determine the exact time of onset of the endocarditis, it is more than likely that it was present before treatment was begun. The patient died in spite of continued sulfadiazine therapy.

Table 4 shows the toxic reactions from the use of sulfadiazine in 137 patients. This group includes the 115 patients with pneumococcal pneumonia, 9 patients with clinical and roentgen ray evidence of pneumonia whose sputum contained no pneumococci on repeated examinations, and 13 patients suffering from nonpneumococcal diseases, such as influenza, acute bronchitis, brucellosis and tuberculosis. Six patients, or 4.4 per cent, suffered from mild or moderately severe vomiting. It was never severe enough to require discontinuing the drug. One patient had acute hemolytic anemia with recovery following cessation of drug therapy. Three patients exhibited a depression of the leukocyte count to 3,000 per cubic millimeter in 2 cases and 3,500 in 1 case. The white blood cell counts returned to normal in every case after the drug was stopped. In 1 patient there was a leukemoid reaction (without hemolytic anemia), the leukocytes reaching a peak of 63,700 per cubic millimeter with a concomitant increase in the younger forms of the neutrophilic series, all of which returned to normal within ten days of the cessation of sulfadiazine treatment.

TABLE 4.—*Toxic Reactions in One Hundred and Thirty-Seven Cases*

Reaction	Number of Cases	Per Cent
Nausea and vomiting	6	4.4
Slight or moderate.....	0	...
Severe.....	1	0.7
	3	2.2
	1	0.7
	4	3.0
	1	0.7
	4	3.0
	2	1.5
Total.....	22	16.2

Four patients were delirious during the period of drug administration. One patient had slight mental confusion and yellow vision for two days, while the free sulfadiazine in the blood fluctuated between 10 and 12 mg. per hundred cubic centimeters. Both symptoms subsided promptly when the drug was stopped.

Drug fever occurred in 4 patients. One of these patients was subsequently given 3 Gm. of sulfadiazine and exhibited a prompt recurrence of the fever, whereas neither sulfathiazole, sulfapyridine nor sulfanilamide caused any rise in the patient's temperature.

Evidence of renal lithiasis was not observed in any of the patients. Sulfadiazine crystals were found less frequently in the urine than sulfapyridine or sulfathiazole crystals during administration of the latter drugs in similar dosages. The blood urea nitrogen of 2 patients became elevated after the administration of sulfadiazine. Since the urea nitrogen levels of both patients remained below 50 mg. per hundred cubic centimeters, and there were no other evidences of renal disease, it is difficult to determine whether this mild azotemia was due to the disease or to the sulfadiazine. There were no fatalities as the result of toxic reactions.

COMMENT

The problem of the adoption or rejection of a new member of the sulfonamide group may be approached by determining how closely the new compound approximates the ideal sulfonamide. Such an ideal drug would

be flexible in its modes of administration, would produce no toxic or sensitivity effects in the host and would be therapeutically active against a broad group of common infecting agents. That this ideal has not yet been achieved is evident, but we believe from our results that sulfadiazine more nearly approaches it than sulfathiazole or sulfapyridine.

We have confirmed the results of other observers that sulfadiazine is rapidly absorbed from the gastrointestinal tract, that the blood levels obtained are usually higher than with comparable doses of sulfapyridine and sulfathiazole and that excretion takes place slowly. All these factors, combined with the infrequency of vomiting, make for ease of administration.

With regard to therapeutic effects, the mortality rate of 11.3 per cent obtained in a series of 115 pneumococcal pneumonia patients treated with sulfadiazine is similar to the rate of 11.5 per cent obtained by us in the treatment of 356 patients with sulfapyridine and dextrose sulfapyridine during the past three years. We have treated 75 patients with sulfathiazole during this past season when sulfadiazine was not available, of whom 10, or 13.3 per cent, died.

Flippin and his associates⁴ found a death rate of 12.6 per cent among 87 patients with pneumococcal pneumonia treated with sulfadiazine, and 16.1 per cent among 86 patients treated with sulfathiazole. Finland, Strauss and Peterson⁵ compared the mortality rate of 10.7 per cent obtained by them in 178 patients with pneumococcal pneumonia treated with sulfadiazine with that of 16.3 per cent obtained during the previous season in a similar series of patients treated with sulfapyridine and sulfathiazole.

The presence of the capsular polysaccharide in the serum of pneumonia patients has been repeatedly found to be evidence of a severe infection with grave prognosis. Bukantz, de Gara and Bullowa⁸ were able to detect it in 16 patients out of 135 tested. Ten of these patients (62.5 per cent) died after treatment with sulfapyridine, specific serum or both. We were able to detect the polysaccharide in 5 patients, of whom only 2 died. This evidence, together with the comparisons cited, indicates that sulfadiazine is comparable in therapeutic efficiency to sulfapyridine and sulfathiazole.

As shown in table 4, the toxic effects observed by us among 137 patients treated with sulfadiazine were minimal, the most frequent being vomiting in 4.4 per cent of the patients. It was never severe and did not prevent continued oral administration of the drug. It was less frequent and less severe than that which occurred in our patients treated with sulfapyridine, sulfathiazole or a dextrose sulfapyridine compound. An unusual toxic reaction was yellow vision, which occurred in a patient with relatively high blood levels and was presumably due to the sulfadiazine. It disappeared promptly when the drug was stopped. All the other toxic reactions were mild and transitory.

It appears that sulfadiazine approaches the ideal sulfonamide drug more closely than sulfapyridine or sulfathiazole, because of less toxicity, and that it is equal to these drugs in therapeutic efficiency. If these results are confirmed, sulfadiazine should be considered the present drug of choice in the treatment of pneumococcal pneumonia.

8. Bukantz, S. C.; de Gara, P. F., and Bullowa, J. G. M.: Capsular Polysaccharide in the Blood of Patients with Pneumococcal Pneumonia: Detection, Incidence, Prognostic Significance and Relation to Therapy, *Arch. Int. Med.*, to be published.

SUMMARY

1. One hundred and thirty-seven patients were treated with sulfadiazine. Among 115 patients with typed pneumococcal pneumonia there were 13 deaths (11.3 per cent) and among 17 bacteremic cases 5 deaths (29.4 per cent).

2. Toxic reactions were infrequent. Slight or moderate vomiting occurred in 4.4 per cent of all patients, toxic psychoses in 3 per cent and other toxic reactions less frequently.

3. There are apparent advantages of sulfadiazine over other drugs in the treatment of pneumococcal pneumonia.

2111 Bancroft Place.

ROENTGEN THERAPY FOR RHEUMATOID ARTHRITIS OF THE SPINE

(MARIE-STRÜMPPELL ARTHRITIS; SPONDYLITIS RHIZOMÉLIQUE)

C. J. SMYTH, M.D.

R. H. FREYBERG, M.D.

AND

ISADORE LAMPE, M.D.

ANN ARBOR, MICH.

In a recent report we¹ reviewed our experiences with roentgen therapy in the treatment of 100 patients with various types of rheumatic disease. At that time it was concluded that the results in patients with multiple rheumatoid arthritis were unpredictable, unreliable and less satisfactory than was claimed by most other observers, but that in patients with rheumatoid arthritis of the spine (commonly called Marie-Strümpell arthritis or spondylitis rhizomélisque) the results were encouraging. Of the 15 patients studied at that time 67 per cent showed definite evidence of improvement; some were completely relieved of symptoms, and in 2 with early involvement there was almost complete disappearance of all clinical evidence of disease. Because of these results we concluded: "We are quite encouraged with the possibilities of roentgen irradiation in this type of arthritis, and we are studying it further." Since that time we have observed the results of such treatment in 37 additional cases, and it is our purpose in this report to analyze the results obtained in the entire group.

The earliest report we have found of the use of roentgen therapy for rheumatoid arthritis of the spine is that of Kahlmeter² in 1930. He stated that of 155 patients with different types of arthritis treated by roentgen therapy 3 had rheumatoid arthritis of the spine; 1 of these became symptom free, and the other 2 were improved. In 1935 Scott³ reported that "wide field" roentgen irradiation (technic to be discussed hereafter) was beneficial to patients with "spondylitis adolescens" ("rhizomélisque"). In subsequent reports this author has claimed remarkable results with such

The Rackham Arthritis Research Unit is supported by the Horace H. Rackham School of Graduate Studies of the University of Michigan. Read before the Section on Orthopedic Surgery at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 4, 1941.

From the Rackham Arthritis Research Unit and the Department of Roentgenology, Division of Radiation Therapy, University of Michigan Medical School.

1. Smyth, C. J.; Freyberg, R. H., and Peck, W. S.: Roentgen Therapy for Rheumatic Disease, *J. A. M. A.* 116: 1995-2001 (May 3) 1941.

2. Kahlmeter, Gunnar: The Roentgen Treatment of Arthritis, *Brit. J. Actinotherapy* 5: 93 (Aug.) 1930.

3. Scott, S. G.: X-Ray in Chronic Rheumatic Arthritis: Diagnosis, Prognosis and Treatment, *Brit. J. Phys. Med.* 10: 127-128 (Dec.) 1935.

roentgen therapy, and in his monograph⁴ (1939) he summarized results in more than 400 cases in which treatment was given in various stages of this disease. Patients with early disease responded best and often became symptom free within a few months. Recently Scott has been criticized⁵ because of his failure to present statistical or clinical details.

Kemen⁶ in 1936 treated 536 patients with rheumatic disease with roentgen therapy; among these he listed 77 with rheumatoid arthritis of the spine. His technic was similar to ours. His results were "surprisingly good: At the completion of treatment 33 patients were substantially improved, 34 improved and 10 uninfluenced. Of the 29 observed at the end of four to six months 19 were further improved."

Hare⁷ in 1940 stated that of 35 patients with rheumatoid arthritis of the spine whom he treated with roentgen radiation, 80 per cent were relieved of pain. He treated the entire spine and the sacroiliac joints.

Weinberg⁸ reported the results of roentgen treatment of 161 patients with "arthritis and para-arthritis"; among this group, 90 were said to have "spondylitis." After careful examination of the limited data describing these patients, we are convinced that the majority probably did not have rheumatoid arthritis of the spine but were suffering from osteoarthritis of the spine or from nonarticular rheumatism of the back. We therefore are unable to evaluate the results he obtained with rheumatoid arthritis of the spine.

METHOD OF STUDY

Only patients for whom the diagnosis of rheumatoid arthritis of the spine was established by history, physical signs, roentgenographic examination and elevation of the rate of erythrocyte sedimentation were selected for this study. The patients were divided into three groups, primarily on the basis of roentgenographic changes:

(1) early disease—those with roentgenographic changes limited to the sacroiliac joint; (2) moderately advanced disease—those with a partly or completely obliterated sacroiliac joint and with calcification of longitudinal spinal ligaments over several segments, and (3) far advanced disease—those in whom the sacroiliac joint was completely ankylosed and those in whom extensive paravertebral ligamentous calcification and obvious involvement of the apophysial joints occurred, with or without involvement of the girdle joints.

The technic of roentgen therapy was as follows: Two hundred kilovolts (175 kilovolts constant potential equivalent) was used, with 0.5 mm. of copper and 1 mm. of aluminum filtration, a half value layer of 0.9 mm. of copper, a 50 cm. skin-target distance and an output of 50 r (measured in air) per minute, with the usual size of the field approximately 200 to 300 square centimeters. In the earlier part of our investigation, each field was treated three times, with 200 r (measured in air) each time. The treatments were given every other day; thus the total dose per field was 600 r. Such therapy hereafter will be referred to as "a series of treatments." More recently, the total dose administered to a field (in a "series of treatments") has been reduced

to about 300 r, 150 r being given every other day. Usually three series were given at monthly intervals to the same area. If symptoms were not completely relieved or recurred, or if they developed in new areas, additional treatment was given. All or any portions of the spine (cervical, dorsal, lumbar or sacral) and the sacroiliac joint, or any combination of these regions, were irradiated. The parts selected for treatment were determined by the symptoms and physical signs. In several cases of far advanced disease, involved shoulder and hip joints were also treated.

During the course of treatment and throughout the subsequent period of observation all patients were interviewed frequently. Questions that were in no way leading were asked in order to learn the subjective response, and examinations by the same physician were made frequently to detect physical changes, especially in regard to range of motion, chest expansion and paravertebral and sacroiliac tenderness. The rate of sedimentation of the erythrocytes was frequently determined by the Rourke-Ernstene technic.⁹ In many cases roentgenograms of the spine before and after treatment were compared; in all white blood cell counts were determined before, during and after each series of treatments.

In order to study the possible psychic effect of such treatment, in a few cases a lead screen was used to prevent the roentgen rays from reaching the diseased part. In some instances this control technic was employed before any roentgen therapy was given, and in others it was used between series of roentgen treatments. Care was taken that the patient did not know when such placebo therapy was being used.

The patients have been treated during a three year period, and in most instances we have been able to make frequent follow-up examinations. Two patients have been observed for twenty-seven months after treatment, 14 for one to two years, 11 for six to twelve months, 11 for three to six months and the remaining 14 for approximately three months.

RESULTS

The results in 52 cases in which roentgen therapy was given have been analyzed in regard to clinical changes, both subjective and objective, and also by laboratory methods. The influence of therapy on pain, stiffness, motion of the spine and hips and general disability have been considered in our study of the symptomatic changes. Evidence of objective clinical improvement was determined by frequent examinations of the range of motion of the spine and hips, chest expansion, degree and distribution of paravertebral muscular tenderness, sacroiliac tenderness and, in most cases, body weight. The degree of improvement was graded 1, 2, 3 or 4 to indicate increasing benefit. We have considered improvement of grade 2 (moderate), 3 (striking) or 4 (disappearance of symptoms and physical signs) as significant, and hereafter reference to improvement or "significant improvement" should be understood to mean improvement of grade 2 or more.

A large percentage of the patients have improved significantly. In some, especially patients with early disease, striking relief of symptoms, particularly pain, occurred soon after the first series of treatments and there was continued gradual improvement to the point of complete disappearance of all clinical evidence of the disease. We were surprised and pleased to observe that some patients with partial calcification of liga-

4. Scott, S. G.: *Wide Field X-Ray Treatment*, London, George Newnes, Ltd., 1939.

5. Hench, P. S.; Bauer, Walter; Dawson, M. H.; Hall, Francis; Hollbrook, W. P.; Key, J. A., and McEwen, Currier: *The Problem of Rheumatism and Arthritis*, Ann. Int. Med. 13: 1937 (April) 1940.

6. Kemen, A.: *Röntgenbehandlung der rheumatischen Erkrankungen, insbesondere der Bechterewschen Erkrankung*, Verhandl. d. deutsch. Gesellsch. f. inn. Med., abstr. 49: 46-54, 1937.

7. Hare, H. F.: *The Diagnosis of Marie-Strümpell Arthritis with Certain Aspects of Treatment*, New England J. Med. 223: 702-705 (Oct. 31) 1940.

8. Weinberg, T. B.: *Arthritis and Para-Arthritis Treated with the Roentgen Ray*, Am. J. Roentgenol. 43: 416-424 (March) 1940.

9. Rourke, M. D., and Ernstene, A. C.: *A Method for Correcting the Erythrocyte Sedimentation Rate for Variations in the Cell Volume Percentage of Blood*, J. Clin. Investigation 8: 545-559 (June) 1930.

ments showed a significant increase of motion and chest expansion when the pain in the back was relieved. The beneficial effects, whether partial or complete, have persisted in most patients throughout the period of observation. For those whose symptoms recurred several months after therapy, additional treatments usually proved effective in producing relief. Most persons

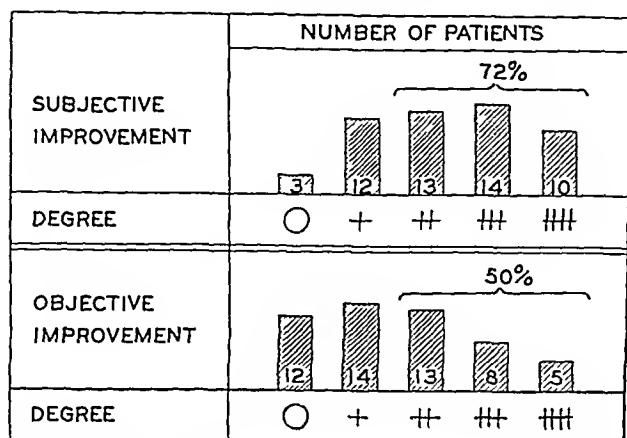


Chart 1.—Clinical results in 52 patients with rheumatoid arthritis of the spine treated with roentgen therapy.

reported improvement within the first week after the beginning of treatment, and frequently patients insisted that within a few hours after therapy a decided reduction in pain and stiffness had occurred. In others, no change was evident until after the second series of treatments and the improvement was generally slower and less. If there was no improvement after either the first or second series, the possibility of benefit with additional irradiation was slight.

The results of our clinical observations, irrespective of the duration of symptoms, activity of the disease or extent of involvement, are summarized in chart 1. Thirty-seven of the 52 patients (72 per cent) obtained a significant degree of subjective benefit, whereas 26 (50 per cent) were significantly benefited in regard to objective clinical changes.

The clinical results in relation to the extent of the disease as measured primarily by roentgenographic examination are summarized in chart 2. Twelve (92 per cent) of the 13 patients with early disease were significantly improved both subjectively and objectively. Thirteen (68 per cent) of the 19 with moderately advanced disease reported significant symptomatic improvement, and 7 (37 per cent) showed significant objective clinical improvement. Fifteen (65 per cent) of the 20 in the group with far advanced disease showed a significant degree of subjective improvement, whereas only 7 (35 per cent) manifested physical signs of improvement.

The clinical results have been studied to determine what correlation, if any, exists between the duration of symptoms prior to treatment and the degree of improvement (chart 3). We have separated the patients into three groups: those who have had symptoms for less than two years, 13; those who have had symptoms for two to eight years, 22, and those with symptoms for more than eight years, 17. Of the first group, 85 per cent were significantly benefited subjectively and 69 per cent objectively. Among the second group 50 per cent reported significant relief of symptoms and 36 per cent were improved as judged by physical changes. Rather surprisingly, the highest percentage of subjective

improvement, 88, occurred in group 3, but in this group significant objective benefit was found in only 41 per cent.

It was shown in our study of patients with multiple rheumatoid arthritis, by using lead screens to protect the parts from irradiation, that in many cases symptomatic improvement following roentgen therapy was psychogenic. We employed the same technic in some cases of rheumatoid arthritis of the spine. None of the patients protected from irradiation by lead screens showed significant improvement, but without exception when they were later treated with roentgen rays significant improvement occurred. Other patients were treated first with irradiation directed to one area of the spine, and improvement was noted only in the area treated; later a different area of the spine was treated, but with a lead screen, and almost uniformly no beneficial effect followed.

Changes in the Rate of Sedimentation of the Erythrocytes.—Patients with rheumatoid arthritis of the spine usually have an elevated erythrocyte sedimentation rate, and reductions in rate are considered by most students of arthritis to indicate improvement in the disease process. Determination of the rate was repeated often enough for 32 of the 52 patients to provide another objective method of evaluating results. (We considered no change in rate significant unless it was 0.3 mm. per minute or more and unless such a change persisted throughout the period of observation.) Thirteen of the 32 patients, or 41 per cent, showed a significant decrease in the erythrocyte sedimentation rate. In all except 1 of these 13 there was significant clinical improvement. Although exceptions occurred, in general the greatest reductions in the rate were found in patients in the early or the moderately advanced stage of the disease and accompanied the more remarkable clinical improvement. Likewise, smaller changes or no change in sedimentation rate generally occurred in patients with more advanced disease and in those who improved to a lesser degree. In 3 patients (9 per cent) a significant increase in the rate occurred, and each showed only symptomatic improvement and that of only moderate degree.

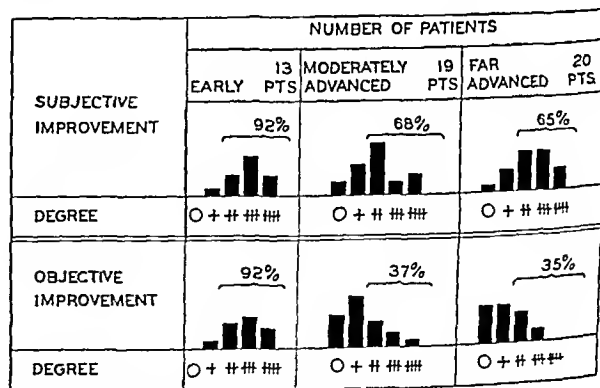


Chart 2.—Clinical results in relation to extent of disease.

Changes in the Roentgenographic Appearance of the Treated Areas.—Seventeen patients were examined roentgenographically from six months to two years after therapy. In none was any evidence of anatomic improvement demonstrated. In 8 there was an increase in calcification of the paravertebral ligaments, and in 5 of these significant clinical improvement and reduction in the erythrocyte sedimentation rate had occurred.

III Effects.—The only potentially serious ill effect we have encountered to date is leukopenia. Although moderate transient decreases in the number of circulating leukocytes occurred not uncommonly, in only 3 patients of the entire group was significant leukopenia observed. In each one this change in the blood occurred after the second series of treatments to the entire spine, given with the technic employing the larger amount of irradiation (600 r to each of three or four parts). The lowest counts were 3,400, 1,700 and 1,100 cells per

the disease process can be arrested it is advantageous that this be accomplished before disabling abnormal calcification and ankylosis result.

There may be a question concerning the diagnosis of rheumatoid arthritis of the spine in our patients "with early disease," who showed changes in the sacroiliac joint as the only roentgenographic abnormality. It has been emphasized¹⁰ that sacroiliac arthritis often (but not always) is the earliest roentgen sign of this disease. However, the existence of sacroiliac arthritis does not necessarily signify the inevitable development of spinal arthritis. In all our patients "with early disease," with roentgenographic abnormalities present only in the sacroiliac joint, the existence of marked restriction of spinal motion in the lumbar and even the dorsal region, the gross diminution in chest expansion, the progressive loss of weight and disability, together with elevated erythrocyte sedimentation rates, left no doubt in our minds that the condition was characteristic rheumatoid arthritis of the spine (Marie-Strümpell arthritis; spondylitis rhizomélisque).

It should be pointed out that in the majority of our patients treated by roentgen radiation the predominant change has been the partial, and in some instances complete, control of symptoms, especially pain and stiffness. Some of the observed objective improvements, namely the increase in chest expansion and spinal motion, the reduction in paravertebral muscular tenderness and the improvement in general disability, may be entirely the result of the reduction in pain. Whether this control of symptoms is the only value of roentgen treatment or whether the course of the disease is actually checked is an important question. The facts that the symptomatic improvement continues so long in some patients and that the erythrocyte sedimentation rate decreases in many, especially those with early disease, suggest that the course of the disease may have been favorably altered.

However, the lack of complete correlation between the erythrocyte sedimentation rate and the clinical changes, together with the realization that numerous factors may alter the sedimentation rate, does not allow determination of the rate definitely to settle the question. The finding of increased calcification of spinal ligaments in some patients symptomatically improved may throw doubt on the arrest of the disease; on the other hand, this increased calcification may not result from continued active inflammation but may be actually part of a healing process. Obviously, therefore, additional clinical observations and years of follow-up study on cases of rheumatoid arthritis of the spine and other cases will be necessary before final evaluation of the effects of roentgen irradiation on the course of the disease can be made.

The treatment we have employed is a form of local high voltage roentgen therapy. In this respect it is similar to the technic of Kahlmeter,² Kemen,⁶ Swaim¹¹ and Hare,⁷ although certain factors are different. As yet there is no recognized standard technic of roentgen irradiation for rheumatoid arthritis of the spine; factors such as dosage, size of ports and frequency of irradiation are being investigated by the few persons studying this type of treatment in an attempt to learn the optimal technic. Because we observed leukopenia in 3 patients,

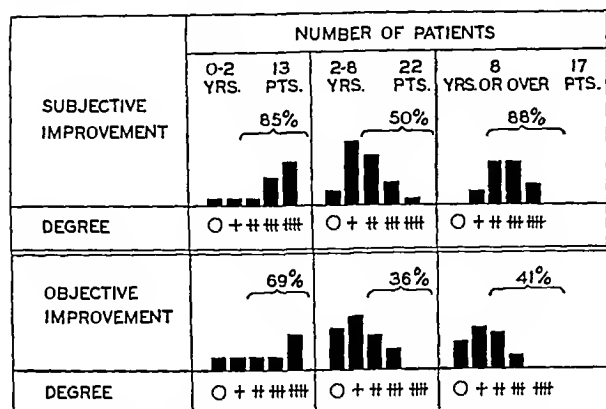


Chart 3.—Clinical results in relation to duration of disease.

cubic millimeter. The decrease was chiefly in lymphocytes in 1 patient and in all elements of the white cell series in the other 2. In none were there associated clinical consequences of this depression of the leukocytes, and complete recovery occurred in all within one month.

Symptoms referable to the gastrointestinal tract were common; anorexia, nausea and vomiting occurred as a rule when the lumbar and dorsal parts of the spine were treated. These symptoms usually began four to six hours after therapy and always completely subsided in two or three days. They were slightly more severe when larger amounts of radiation were given. In several cases large amounts of thiamine hydrochloride, administered either intramuscularly or orally, were of no value in controlling or preventing such sickness.

Temporary depilation over the neck resulted in 2 patients treated early in the series; for this reason we commonly avoided irradiation above the hairline in patients subsequently treated.

COMMENT

The results clearly indicate that roentgen irradiation is a valuable means of treatment for rheumatoid arthritis of the spine. The patients who had early disease received the greatest benefit; remarkable reduction of all symptoms, especially pain and stiffness, increase in chest expansion and spinal motion and sustained gains in body weight were almost universally observed. Some of these patients felt entirely well after treatment and returned to gainful occupations, often hard manual labor. The patients in the later stages of the disease, whose roentgenograms showed calcification of spinal ligaments, although frequently significantly improved, continued to have limitation in spinal motion and other disability due to anatomic changes. Because of the much more dramatic results of treatment during the early stage of rheumatoid arthritis of the spine we believe it is of great importance to recognize the disease early in its course and institute treatment then. If

10. Lassen, N.: Spondylarthritis Ankylopoietica: Remarks Concerning Early Diagnosis. *Ugesk. f. Læger* 101:1307-1312, 1939. Scott, S. G.: Radiology and the Rheumatic Backache. *J. Roy. Inst. Pub. Health & Hyg.* 1:236-244 (Jan.) 1938. Forester.²²
11. Swaim, L. T.: Proceedings of the American Rheumatism Association, 1940, *J. A. M. A.* 115:2207-2210 (Dec. 21) 1940.

we reduced the dosage per field, hoping we would avoid undesirable changes in the blood (and irradiation gastrointestinal sickness) and retain the satisfactory therapeutic results. We have observed significant beneficial effects with the modified therapy and to date have observed no undesirable changes in the blood; however, our experience with smaller amounts of irradiation is insufficient to allow final evaluation. We strongly advise that undesirable changes in the blood, especially leukopenia, be looked for by all persons using roentgen irradiation for rheumatoid arthritis of the spine, especially if treatment is given over the entire spine. Our present practice is to determine the leukocyte count before each irradiation, and if a progressive decrease in leukocytes is found treatment is discontinued, at least temporarily. Gastrointestinal disturbances have not been reduced by using a smaller amount of radiation.

Because of the possibility of sterilization in the female if large amounts of roentgen radiation are directed over the pelvis, we have never given more than a total of 300 r over the female pelvis in a series of treatments.

Scott⁴ reported excellent results in patients with "spondylitis adolescens" ("rhizomélisque") by the use of a special technic of roentgen irradiation which he called "wide field" therapy.¹² We have critically examined a patient with early rheumatoid arthritis of the spine several times before and after he was treated by Scott, and we are convinced of the remarkable clinical and laboratory improvement which followed. Recently we have employed wide field irradiation on 2 patients, following the technic of Scott in every essential detail. It will be necessary to study more patients treated in this way before final evaluation of the effect can be made.

We are unable to find any adequate explanation of the way in which roentgen rays act to produce the changes which we have observed. This subject was discussed in our earlier report,¹ and we have no new information relative to the rationale of treatment. In this regard it is interesting to note that Forestier¹³ treated 25 patients with rheumatoid arthritis of the spine with radon injected subcutaneously. He reported excellent results and expressed the belief that, if such treatment is sufficiently pursued, complete arrest of the disease can be accomplished.

SUMMARY

Fifty-two patients with typical rheumatoid arthritis of the spine were treated with local high voltage roentgen radiation over the spine. Considering all patients irrespective of the extent of involvement, duration of symptoms or activity of the disease, 37 (72 per cent) were significantly improved with reference to symptoms and 26 (50 per cent) were significantly improved as judged by physical findings. The results were excellent in the patients with early disease, in whom roentgenograms revealed abnormalities only in the sacroiliac joint; in this group 92 per cent showed significant, sustained, subjective and objective improvement, and some were completely relieved of all clinical evidence of the disease. In the later stages, after spinal liga-

mentous calcification had occurred, we were surprised to find that a high percentage showed significant reduction in pain and stiffness and in some cases objective improvement. We found no evidence for a psychogenic basis for symptomatic relief.

The erythrocyte sedimentation rate decreased significantly after roentgen therapy in 41 per cent. Leukopenia was found in 3 patients, but all recovered completely within one month after therapy. We consider leukopenia a potential danger associated with roentgen therapy and wish to emphasize the advisability of frequent blood counts in order to avoid serious ill effects. Further study is necessary to determine the optimal technic of treatment.

We consider roentgen therapy the best method of controlling the symptoms of rheumatoid arthritis of the spine; whether the benefit is entirely symptomatic relief or whether the course of the disease is favorably affected will need to be determined by further investigation.

ABSTRACT OF DISCUSSION

DR. BERNARD I. COMROE, Philadelphia: At the University of Pennsylvania we have had about the same results that the authors have reported. Roentgen therapy in rheumatoid arthritis of the spine is the best single agent that we have at our disposal. Our method of treatment varies somewhat from theirs. We employ intermediate voltage, using 135 kilovolts. We have divided the spine posteriorly into three areas and have treated each area at the onset on consecutive days. For example, on Monday we treat area A with 100 roentgens, on Tuesday area B with 100 roentgens, on Wednesday area C with 100 roentgens, and on Thursday all three areas with 100 roentgens. The following Monday and Thursday we give 100 roentgens to all three areas; this is repeated the next Monday and Thursday so that each area has received 600 roentgens over a period of several weeks. At this time we wait for a period of ten or twelve weeks before instituting further roentgen therapy. With this dosage we have been able to eliminate practically all untoward reactions. There has been no nausea or vomiting in any of these patients treated only posteriorly and we have had no instances of marked or persistent leukopenia. We have hesitated to treat female patients with roentgen rays because of the dose that seems necessary to obtain results; in women we have used the recognized medical and orthopedic treatment as outlined by Dr. Loring Swaim and others. It has been shown by Griffith and Hodes at the University of Pennsylvania that following roentgen therapy there occurs a marked dilatation of the capillaries, subcapillary plexuses and arterioles under the area treated, which persists not for only a few hours (as occurs with other forms of heat) but for at least several days. We think that this active hyperemia may be part of the answer to the improvement from roentgen therapy in these patients.

DR. CARL E. BADGLEY, Ann Arbor, Mich.: Primarily the treatment has consisted in attempting to relieve these patients during their period of pain until ankylosis sets in, and with the resultant ankylosis relief of pain is the usual rule. Then comes the question of arthroplasties for ankylosed joints, usually the hip joints, which require, if both are involved, an arthroplasty for function. Roentgen therapy may do far more than simply give relief from pain, which is the only conception that the authors have presented today. They have not claimed to cure these patients. They have presented a group of cases treated and observed over a period of a year with substantial maintenance of relief from pain. Not only does roentgen therapy give relief from pain as a temporary measure but it may give relief from pain for some period of time. They have pointed out that calcification of ligamentous structures has continued by roentgen examination with the continuation of the formation of calcification of the ligamentous structures and presumably increasing ankylosis. They have also demonstrated what I have come to regard as an important factor, and that is that the sedimentation rate has diminished. That leads

12. Scott used a special wide angle x-ray tube to deliver a "roentgen ray bath" to the whole trunk, front and back, which are covered by two overlapping 12 inch (30.4 cm.) fields. The physical factors were 140 kilovolts, a filter of 3 mm. of aluminum and 60 to 100 r, with a standard distance of the tube to patient of 17 inches (43.1 cm.). In the first series treatments were given twice weekly for eight sessions and were followed by an interval of six weeks, in the second series twice weekly for six sessions with an interval of six weeks, and in the third series weekly for six sessions.

13. Forestier, J.: Importance of Sacro-Iliac Changes in Early Diagnosis of Ankylosing Spondylarthritis: Marie-Strümpell-Bechterew Disease, *Radiology* 33: 359-402 (Sept.) 1939.

me to the third point, which has not been mentioned and which I think will be of significance. In our attempts at arthroplasty by the vitalium cup in this group of patients with spondylitis rhizomelica we have had excellent results if bony ankylosis has occurred and if the sedimentation rate is low. In those patients, however, who have not an ankylosis, who do have an elevated sedimentation rate and who do have symptoms of pain in the joint, our results with arthroplasty have not been good. It seems that in addition to the relief from pain and to the improvement of function which they have demonstrated in 50 per cent of their patients they may also put these patients in better condition for further operative treatment of the affected joints.

DR. CHARLEY J. SMYTH, Ann Arbor, Mich.: Dr. Comroe suggested that by his technic he had been able to obviate some of the gastrointestinal symptoms which occur with this method of therapy. In our experience anorexia, nausea, vomiting and sometimes diarrhea were common toxic symptoms, particularly when treatment was directed over the abdomen. Even after the total amount of irradiation was reduced these symptoms were observed. I was glad to hear Dr. Comroe's remarks regarding a possible rationale for roentgen therapy. We have been unable to find any adequate explanation for the way in which roentgen rays produce the changes which we have observed. Forestier has treated 25 patients by injecting radon subcutaneously. He reports excellent results and believes that, if such therapy is sufficiently pursued, complete arrest of the disease can be accomplished. We are convinced that roentgen therapy is a valuable treatment in this disease. Our results are in agreement with most others who have used this method in a large number of cases. Whether the benefit is entirely symptomatic or whether the course of the disease is favorably altered are questions which can be determined only by further investigation.

INDUSTRIAL EXPOSURE TO TOXIC CHEMICALS

A SCHEME FOR ITS MEDICAL CONTROL

JOHN H. FOULGER, M.D.

AND

ALLAN J. FLEMING, M.D.

WILMINGTON, DEL.

Modern total warfare in Europe and national defense in the Americas make health and efficiency as important for civilians as for the fighting forces. The vast scale of defense preparations is adding to the difficulty of maintaining this health. Companies hitherto working on a relatively small scale are expanding to fulfil war contracts and are handling materials new to them. Inexperienced workers are being employed. Perhaps of most importance, physicians with little or no experience in industrial medicine and no knowledge of industrial toxicology are suddenly made responsible for the care of thousands of workers.

Few branches of modern industry can avoid the use of chemicals of potentially toxic nature. There is rapidly growing a demand for information on industrial toxicology. There is also an increasing realization that the literature in this field, while detailed and voluminous in records of frank cases of poisoning, holds scant data which can be used at once in a practical program for conservation of health.

It seems pertinent at this time to describe briefly a scheme for medical control of industrial health which has been built up during the last four years and is now used as a routine in large plants in the chemical industry, both for control of known hazards and for detection of new ones. A full description of the development of this method and of the tests to which it has been sub-

jected would require a voluminous report. For the moment, it is thought best merely to outline the procedure followed, with such explanation as is needed to show its value.

Satisfactory prevention of injury from exposure to toxic chemicals cannot be based on knowledge of the clinical pathologic changes in cases of actual poisoning. Such prevention can be efficient only if knowledge is available on the first detectable changes in physiology that follow exposure to such concentrations of chemicals as, if exposure were continued, might cause ill health. This type of knowledge becomes of more importance if it is realized that, day by day, new materials of unknown activity are being used. The combined facilities of all toxicology laboratories of the country are not sufficient to investigate quickly all these new potential hazards.

Our experience has, we think, definitely shown that the first effects of exposure to toxic substances, which when absorbed by any route can have systemic (as opposed to purely local) effects, are substantially the same no matter what the chemical structure of the material. On the detection of these early effects we have built up a program of preventive medicine. This scheme is essentially one of medical control, not of chemical or engineering control. We would emphasize this point because there is a growing tendency to rely on air analyses and on so-called safe levels of atmospheric concentrations of gases, vapors, fumes or dusts. This tendency overlooks the fundamental fact that, apart from the economic aspect of loss of valuable material (an aspect which is not of medical concern), the actual concentration of toxic substances in the atmosphere of workrooms is of no importance if the health of the worker is not impaired. Obviously the extent to which workers are affected cannot be made known by studying the air. We are concerned with whether the worker is sick and not whether the air is sick. In very important cases it is not inhalation of contaminated air which caused injury but absorption of materials through the skin from soiled work tools or clothing. In such event, analyses of the air are useless.

We do not wish, however, to imply that analysis of the air is of no value in preventive medicine. It is highly important in determining the mechanical efficiency of operating equipment and ventilating systems. Yet it is useless to develop a complicated system of analysis of the air and at the same time to omit medical control. This brief discussion of the problem will serve to point out the significance of the method of medical observation to be described.

There are three stages in industrial life at which the worker should receive a medical examination: (a) on applying for work, (b) while working and (c) when released from employment or when transferred from one occupation or one type of exposure to another.

Preemployment examinations should be comprehensive, including not only the usual history, physical examination and laboratory studies of blood and urine but also a roentgen study of the chest and, perhaps, an electrocardiogram. Such examinations should be used for selection and never for elimination of workers. Selection of a worker for a given job is necessary. One does not license a blind man to drive an automobile or locomotive. One should not allow a sufferer from claustrophobia to work in confined places such as sewers, nor should one allow a man with tuberculosis to work in a dusty atmosphere, nor one with liver disease

to be exposed to a chemical which can further injure his liver. It is best to grade the hazards in different operations in the plant on a medical basis and to select workers on the same basis. In large plants this may not be difficult, for there are usually jobs involving little hazard which will give employment to those not fit for the hazardous occupations. In smaller plants this is not always the case. There then arises the problem of rehabilitation which, in our opinion, is an important but hitherto neglected duty of medicine in industry.

After the employee is selected for the job, a plan must be set up for following his health during employment. Finally, since all workers do not remain in one job or one plant forever, each should be examined on being transferred to another job or on being released from employment. This transfer or release examination should be as comprehensive as was the preemployment examination. Only by following such a policy can the present confusion attending medical evidence in suits for compensation be avoided.

We are concerned here with the criteria for employment and the scheme for control of health during

symptoms can in no way be determined, since it can be deduced only from the statement of a worker. That statement depends on many personal characteristics, including veracity. Sometimes the frequency of occurrence of particular symptoms can be analyzed mathematically, but there is always a question as to the degree of frankness of each member of the group under study.

The first signs of exposure to toxic chemicals are definite changes in pulse rate and in blood pressure. Changes in diastolic blood pressure are the most important. Blood pressure can be measured by standard procedure and recorded numerically with a fair degree of accuracy. Such records, therefore, are susceptible of mathematical analysis. For this reason, our scheme is based on blood pressure measurements. This has an advantage which is not obvious at first to those not acquainted with industrial medicine. The efficiency of any scheme for medical control of health in industry depends on the frequency with which the physician can examine each individual worker. But each examination requires that the worker leave his work. Examinations, therefore, must be simple and not time consuming. Industry is concerned with the production of materials and not of medical examination records. Experience shows that an examination which consists of the recording of the few symptoms outlined and of blood pressure readings occupies only about ten to fifteen minutes. It can be, and is being, used as a routine at intervals of one, two or three weeks and, once understood by management and worker, is welcomed by both as giving assurance of protection against ill health from occupational hazards.

The form of record of such special examinations is shown in the accompanying form. The blood pressure should be measured with the worker sitting, according to the recent recommendations of the Committee for Standardization of Blood Pressure Readings of the American Heart Association.¹ For the purpose of our scheme, we find it best to take measurements on both arms as well as to record the two levels of diastolic blood pressure. We suggest this because much interesting early information can be obtained from the occurrence of abnormal differences between the measurements on the two arms and between the two levels of diastolic blood pressure on either or both arms. When the sphygmomanometer cuff is changed from one arm to the other, the worker being examined must not be allowed to move rapidly in assuming a comfortable position. He need not stand up but need only rotate his chair. A swivel chair is very useful here.

Blood pressure measurements can be followed in several ways. The simplest is by setting up arbitrary levels of normal and abnormal to be used in both pre-employment and special examinations. There is much controversy as to what is to be accepted as normal or abnormal blood pressure. We list here the levels which we have found useful and on which we base our program. The following we consider abnormal:

- Systolic blood pressure, 150 mm. or higher, or below 100 mm.
- Diastolic blood pressure, 90 mm. or higher, or below 65 mm.
- Pulse pressure below 30 mm.
- Pulse rate 90 or higher a minute; below 60 a minute.

1. Standard Method for Taking and Recording Blood Pressure Readings by the Committee for the Standardization of Blood Pressure Readings of the American Heart Association and the Committee for the Standardization of Blood Pressure Readings of the Cardiac Society of Great Britain and Ireland, J. A. M. A. 113: 294-297 (July 22) 1937.

Name Occupation Date	Plant number or Social Security Number Temperature	Age Humidity
Pulse		
Blood pressure of right arm		
Blood pressure of left arm		
Weight		
SYMPTOMS:		
Fatigue		
Headache		
Irritability		
Nausea		
Fulness of stomach		
Loss of appetite		
Gas on stomach		
Dizziness		
Pain in epigastrium		
Pain in precordium		
Pain in arms		
Pain in neck		
Dyspnea at rest		
Dyspnea on slight exertion		
Examiner M.D.		

Form of record for periodic examination of workers during exposure to toxic chemicals.

employment. The former must necessarily include such methods of selection as will be used as a basis for the setting up of the control scheme during employment. Both, therefore, depend on the consideration of the first effects of exposure to toxic chemicals. Our experience over the last four years has shown that these first effects consist of a few simple symptoms and certain definite signs, which are the same in exposures of many kinds. The symptoms are: easiness of fatigue, headache, gastroenteric disturbance (nausea, loss of appetite, a feeling of fulness of the stomach, gas on the stomach, pain in the epigastrium), dizziness, precordial pain, pain or tingling in the extremities and dyspnea on slight exertion. Of course, all are not present in all cases. They are, at first, indications of functional disturbance only and not of organic injury. Of these symptoms, easiness of fatigue is probably the most universal and usually the first to appear.

Symptoms are matters of opinion or feeling of a patient. They cannot be expressed in any numerical fashion and, therefore, are not subject to statistical analysis. Moreover, certain labor situations often make it rather difficult to obtain a frank history from a worker, and even if a history is obtained the intensity of the

The difference between systolic pressures of the two arms should not be greater than 20 mm.

The difference between diastolic pressures of the two arms should not be greater than 10 mm.

Difference between the two levels of recording of diastolic blood pressure on either or both arms should not be greater than 10 mm.

Despite arguments to the contrary, we find that in a group of workers selected for employment by a medical examination, which includes the foregoing blood pressure criteria, the blood pressure of individuals is stable so long as they are not affected by disease or exposure to toxic chemicals. In such groups, it is our experience that chance (that is, unexplainable) variations in blood pressure beyond the normal limits given do not occur to the extent of more than 6 per cent of a large number of examinations. We shall later describe the use of this yardstick of 6 per cent, taking into account the effect of variations in the number of examination records available for study. Our experience is now based on a study of more than one hundred thousand blood pressure records collected during the last four years on more than 2,000 men exposed to a variety of chemical hazards. Each month this experience is being increased by more than two thousand examinations.

USE OF BLOOD PRESSURE MEASUREMENTS TO STUDY EXPOSURE TO TOXIC CHEMICALS

The simplest method of following the medical status of exposed workers is to examine them at frequent intervals (one week, two weeks or three weeks), and to count the number of examinations in which there occur abnormal blood pressure measurements. The total number of examinations, and the number showing abnormality, are then compared with the 6 per cent yardstick. This comparison is made easy by figure 1. This chart shows, on the horizontal base line, the number of examinations in the group under study. On the vertical line to the left is the number of abnormal examinations in this group. The chart is divided into two large areas. The upper one is for use with groups of examinations totaling from sixty to three hundred and sixty; the lower, groups of examinations from one to sixty. The left hand column, giving the number of abnormal examinations, applies to both parts of the chart. The curved lines divide the chart into four areas in each of the larger sections, and these areas are labeled *N*, 1, 2 and 3 respectively.

These areas correspond to different degrees of probability that the number of abnormal examinations in the group under study is not greater than would be expected in a sample of the same size taken at random from the large standard normal population, in which there are no more than 6 per cent abnormal examinations.

Area *N* includes groups which are not significantly different from the normal standard. Areas 1, 2 and 3 include groups which are significantly different from the normal standard, and the significance increases from 1 to 3. The higher the index of the area, the more abnormal the group under study. The upper limits of *N* correspond to the probability of 1 in 20 that the group under study contains no more abnormal examinations than a sample of the same size from the standard population. These odds are not significant. The upper limits of the other areas are: area 1, 1 in 1,000; area 2, 1 in 100,000; range of area 3, 1 in 100,000 to 1 in infinity. These odds are significant.

When blood pressure measurements are used in following effects of exposure to chemicals, a certain number of facts immediately becomes obvious. These are:

(a) High systolic blood pressure is not an early result of exposure to toxic chemicals. It appears only after months or years of an exposure which has already produced significant changes in diastolic pressure. High systolic pressure, therefore, is not important in following the immediate trend of effects of exposure, with one exception: If a man has been employed already having a high systolic blood pressure (that is, if he has been employed by a method not using the criteria of normal and abnormal pressure levels set out), in his case a fall in systolic blood pressure toward or to or below normal levels can be considered a sign of disease or of action of a toxic chemical.

(b) Low concentrations of toxic chemicals tend to produce an increase in diastolic blood pressure and a fall in pulse pressure. Both may reach abnormal levels. A diastolic blood pressure of 90 mm. or more, if long maintained, may be followed by an increase in systolic blood pressure to abnormal levels and hence by the production of a definite systolic and diastolic hypertension.

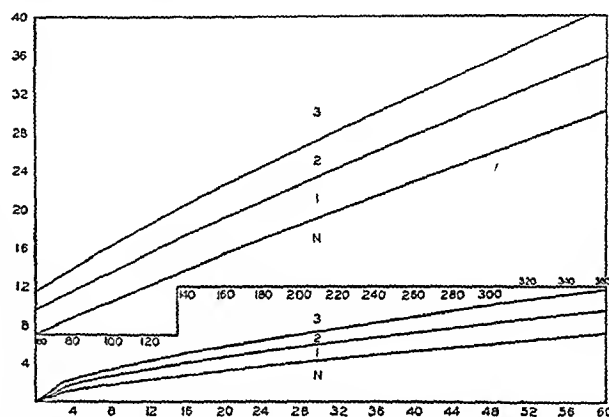


Fig. 1.—Chart for determination of normality or abnormality of a group of examinations by comparison, statistically, with a standard group of normals. (See text for way to use chart.)

(c) Higher concentrations of toxic chemicals cause a decrease in systolic or diastolic blood pressure, or both, and eventually both systolic and diastolic, as well as pulse pressure, may arrive at abnormally low levels.

(d) In a progressive exposure, which is not so acute and intense as to cause an immediate fall in blood pressure, the order of appearance of abnormal pressure is, in general: high diastolic blood pressure, low pulse pressure, low systolic blood pressure and low diastolic blood pressure.

(e) Abnormal differences between systolic or diastolic blood pressures of the two arms, or between the two levels of recording of diastolic blood pressure on either or both arms, may appear before any serious abnormality of individual readings becomes frequent. The exact cause of these phenomena is not yet known.

(f) Changes in pulse rate occur early in exposure but are of significance only when related to diastolic and pulse pressure. The nature of this significance will be mentioned later.

The frequency of occurrence of abnormal blood pressure readings, and especially of abnormal diastolic readings, can be used:

(a) To follow the effects of exposure on individuals, or on groups of workers;

(b) To compare the degree of exposure in different occupations in the same plant, even when those occupations involve exposure to different chemicals, and

(c) To determine the efficiency of physical means of protection of workers and to follow the effects of changes in the means of protection.

SCORING BLOOD PRESSURE READINGS

The inherent defect in the procedure of simply counting the frequency of occurrence of abnormal and normal blood pressure readings is that it fails to indicate the trend to or from abnormal levels in any particular individual record. To eliminate this defect, we have devised a method of scoring, which is based on the mathematics of probability. In a large number of blood pressure measurements it is possible to calculate an average value or a mean. The remaining measurements will then distribute themselves at different distances from this mean according to a symmetric curve of probability, the normal gaussian curve. The mathematics of this curve is well known. We have used this distribution to set up a scoring system which gives some index of the probability of occurrence of blood pressure read-

(fig. 2) from which, using the pulse pressure and diastolic pressure readings, the score can be read at once.

On the horizontal axis of this chart there are entered diastolic blood pressure readings. On the vertical axis are pulse pressure readings. Across the chart are quadrants of circles, each of which at its right-hand end carries a figure, which varies between 1 and 0.1. Since the scores are based on the distances of pulse pressure readings and diastolic blood pressure readings from the mean values and not on whether the actual readings are higher or lower than the mean, it will be found that a diastolic blood pressure of 85 appears at the same point on the horizontal axis as does a diastolic blood pressure of 73, and a pulse pressure of 50 appears at the same place on the vertical axis as does a pulse pressure of 38. To use this chart, the diastolic blood pressure should be read on the horizontal axis and traced vertically until it comes into line with the pulse pressure as read on the vertical axis, and then one reads the score by finding the arc of the circle which is nearest to the point of intersection of pulse pressure and diastolic pressure readings. As a practical procedure, we usually calculate the score from the average of the systolic and diastolic readings of the two arms. When the chemical exposure is such as to lead to circulatory collapse (for example, exposure to nitrites), we use the lower diastolic pressure reading; that is, the pressure read at the disappearance of sound. This makes the method more sensitive. When circulatory collapse is not a probable result of the chemical exposure, we use the diastolic pressure measured at the change of sound.

In using this scoring system, we consider that a score of value 1 to 0.2 indicates a normal relationship between diastolic and pulse pressures, and a normal situation with regard to the mean values determined from a large population. We consider a reading above 0.1 but lower than 0.2 to be of doubtful normality and a reading of 0.1 or lower to be definitely abnormal. In studying groups of workers in a plant, we count the number of scores in their examinations which have a value of 0.1 or less and then classify the group as a whole according to figure 1; that is, we compare it with a yardstick of 6 per cent abnormalities.

The scheme for medical study then becomes as follows: A program of frequent examination of workers is set up by the simple form of examination outlined. (It is best not to set up such a rigid program that a worker is always examined on the same day of the week. We mention this because in certain hazards, after the week end of rest, a man's condition on Monday or Tuesday is not the same as it might be on Wednesday or Thursday, and only by staggering examinations can one, in the course of time, get a complete picture of the situation actually developing.) After the blood pressure measurements have been recorded on each worker as found at a given examination, the blood pressure score is calculated. If it is 0.1 or below, we proceed as follows:

Find whether other men working at the same part of the plant, in the same occupation, show such an abnormal score, either on the same day or on a day or two before. If other examinations give abnormal results, then the immediate probability is that the condition is due to a chemical exposure, and the physician should inquire as to the efficiency of protective

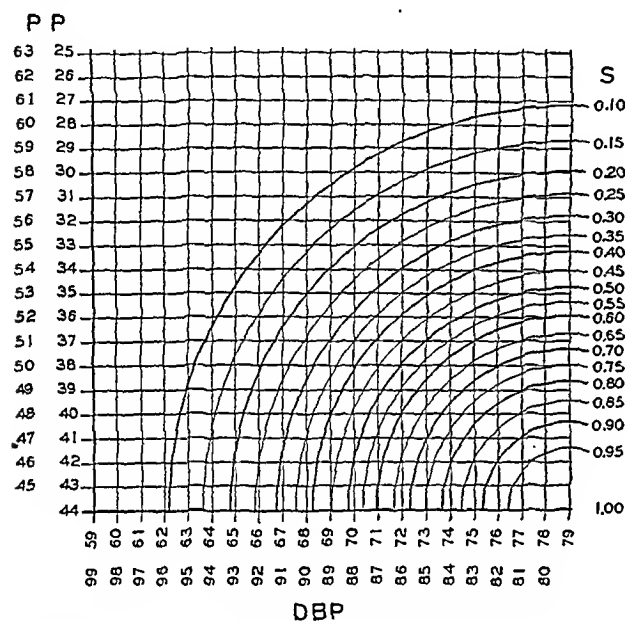


Fig. 2.—Chart for calculation of score for diastolic and pulse pressure readings. (See text for way to use chart.)

ings at varying distances from an accepted mean. The mean used for diastolic pressure (sitting) is 79 mm. and for pulse pressure 44 mm. A diastolic or pulse pressure reading of 79 or 44 respectively would be given a score of 1. Readings above or below these means are given scores less than 1. The scores decrease with increase of the difference between the measured reading and the mean value of 79 or 44. The scores decrease in the same way on both sides of the mean, so that a diastolic blood pressure of, say, 85 mm. would have the same score as one of 73 mm., and a pulse pressure of 38 mm. would have the same score as one of 50 mm. In actual practice, we prefer to use a system which takes into account diastolic and pulse pressure scores simultaneously. The final score is actually the product of the individual diastolic pressure and pulse pressure scores. This is based on the fact that the probability of simultaneous occurrence of two events is the product of the probabilities of occurrence of each event individually. Since the mathematical calculation of the score could be tedious, we have drawn up the graph

equipment, the load of production on the men or the manner in which they are doing their work. If 1 or 2 men alone in a group show an abnormal score on a given day or over a period of one or two days, then one should ask "Are these men in a different job from the others in this group?" or "Is their manner of doing their job such as to give them more exposure than the other members of the group?" or finally, "Are there particular personal habits or personal problems of these two men which make them abnormal when others are normal?"

A single abnormal examination should be taken as an indication that it is wise to reexamine that worker within a few days to decide on his status. If within two or three weeks three or four examinations still show an abnormal score, one must consider the action to be taken in the particular case. These abnormal scores are warnings of functional disturbance due to disease or exposure to toxic chemicals. If the warning is unheeded, organic disturbance may develop. If the warning is heeded, a change in occupation or improved conditions of work, improved diet, more rest after working hours and so forth can, in the majority of cases, remove the functional disturbance and restore the man to complete normality.

DETECTION OF PENDING CIRCULATORY COLLAPSE

Acute exposure to toxic chemicals sufficient to cause a fall in diastolic and systolic blood pressures may lead to a condition verging on circulatory collapse. If a worker in such a state continues to work, collapse may actually occur. It is due, in most instances, to a failure of the circulation to overcome the effects of gravity, so that insufficient blood is returned to the right side of the heart. If this condition is detected immediately, rest in the supine position, with the head lower than the legs, can restore normal circulation. If it is not detected, and the man falls, he may automatically reach the horizontal position and so restore circulation to normal; but, should he fall in a cramped position, sudden death may occur.

It is important to be able to detect such impending collapse and to record the efficiency of measures used in overcoming it. For a long while we made use of the "Crampton index," devised by C. Ward Crampton,² but this index is based only on pulse rate and systolic blood pressure. Moreover, it requires the worker to be lying quietly for at least five minutes and then to be standing for five minutes. After each interval, pulse rate and blood pressure measurements are taken. This may not seem much time, but when each examination in a large program of examinations is extended by ten or fifteen minutes the whole program is liable to be condemned because of the accumulated time lost from work. Recently we have developed tests based on the observation of Fürst and Soetbeer³ that the ratio of pulse pressure to the sum of diastolic blood pressure plus one third of the pulse pressure gives a satisfactory index of the filling volume of the heart. We have studied this index in relation to our probability system of scoring and have established an index of 0.3 as a lower limit of normal. We have also taken into con-

sideration the fact that, while the stroke volume of the heart may not be adequate, yet in such a circumstance a normal person can compensate by a reflex increase of the heart rate. We have calculated that a suitable lower limit of value of the product of volume index \times pulse rate is 23, and that values below 23 indicate impending circulatory collapse.

The routine use of this volume index and its relationship to pulse rate is made easy by figure 3. This consists of three graduated lines. The vertical line on the left marked *S* is systolic blood pressure and is graduated to 2 mm. The vertical line marked *D* is diastolic blood pressure, graduated in the same way. The sloping line marked *V* is the index of filling volume. The table on the right gives the minimal pulse rate,

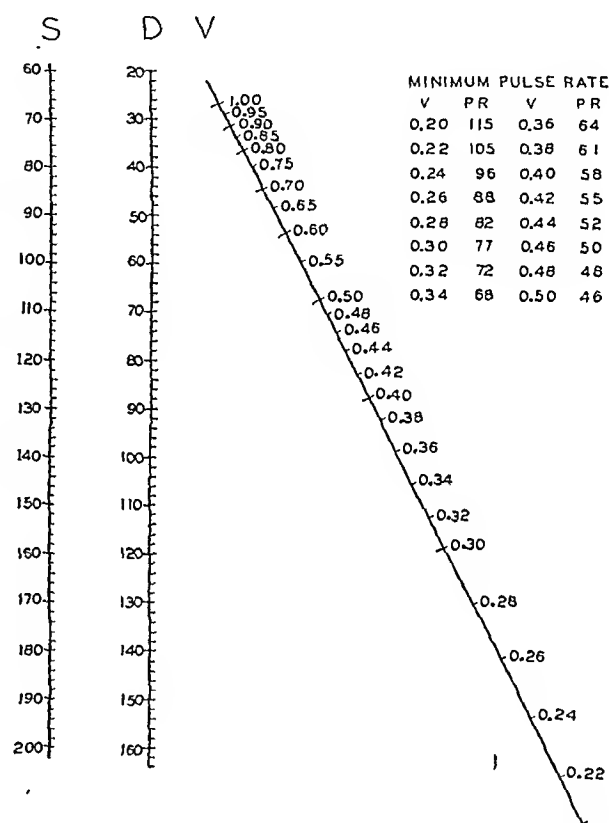


Fig. 3.—Chart for calculation of filling volume index from systolic and diastolic blood pressures. (See text for way to use chart.)

which, when associated with the lower values of the filling volume, is necessary to produce circulatory compensation.

To use this chart, simply stretch a piece of string or lay a transparent ruler across the chart in such a way that it cuts the reading of systolic and diastolic blood pressures and extends over to the volume index line. Read off the volume index and look at the table of minimal pulse rates to see whether or not the man's actual pulse rate is below or above that necessary for proper compensation. To obtain the greatest sensitivity of this method, we use the diastolic pressure reading obtained at the change of sound, since this gives the lower pulse pressure value. As in the case of the probability scoring system, we calculate the filling volume index from the average of the systolic and diastolic pressures of the two arms. This chart is extremely valuable

2. Crampton, C. Ward: The Gravity Resisting Ability of the Circulation; Its Measurement and Significance (Blood Ptosis), *Am. J. M. Sc.* 160: 721 (Nov.) 1920.

3. Fürst, Theobald, and Soetbeer, Franz: Experimentelle Untersuchungen über die Beziehungen zwischen Füllung und Druck in der Aorta, *Deutsches Arch. f. klin. Med.* 90: 190-208, 1907.

in detecting impending circulatory collapse and in following the effect of methods of combating this collapse, whether the condition is due to heat, to inhalation of toxic chemicals or to air hunger produced by flying at high altitudes.

COMMENT

We have outlined a scheme which we have found practical and useful in industrial preventive medicine in the chemical industry. It would require too much space to detail all the possible ways in which this scheme can be used. Each one of the procedures suggested has been reduced to a simple chart or form in which it can be applied without unnecessary arithmetic or higher mathematics. The degree of benefit gained by the use of these charts depends on the frequency of examination and the earnestness with which the individual physician attends to his business of prevention. If he cares more for the diagnosis of poisonings than for prevention, the methods are of little value, and, to be quite frank, neither is he of great value as an industrial physician. In industrial medicine we are not interested in producing sick or dead men. Our job is to keep them well.

The methods outlined have been used in detection or in routine study of results of exposure to chemicals of the following groups or structure:

- Lead
- Carbon monoxide
- Hydrogen sulfide
- Sulfur dioxide
- Hydrocarbons (toluene, diphenyl)
- Chlorinated hydrocarbons (carbon tetrachloride, chloroprene and phosgene)
- Alcohols (methyl alcohol)
- Ketones (acetone)
- Esters (methyl, butyl, ethyl acetate and the like)
- Carbon bisulfide
- Aromatic and aliphatic nitro compounds and nitric acid esters
- Aromatic amines
- Aromatic nitriles
- Diphenyl oxide

So long as we are interested in the earliest signs of exposure to any one of this varied list of compounds, we find the procedure applicable. We have also used the foregoing principles in following the effects of toxic chemicals on experimental animals.

Lest it be imagined that this method of approach is of use only in industrial toxicology and medicine, we would point out that infections are really chemical poisoning. Except in the case of the gas bacillus group, bacteria and infesting micro-organisms do not cause disease merely by their local destructive action. Even in the case of the gas bacillus group, the most important action clinically is the production of a very virulent toxin. Further, in ordinary medical practice, many therapeutic substances are used whose toxic action can be followed by this procedure; for example, the drugs of the sulfanilamide group, acetanilid and its derivatives. Finally, the same procedure would probably be of use in aviation medicine, since deprivation of oxygen, either at high altitudes or in poisoning with carbon monoxide, will cause just such changes in circulation as our scheme is devised to detect.

SURGICAL RESECTION IN NON-SPECIFIC ILEOCOLITIS

CHARLES W. MAYO, M.D.

AND

EDWARD S. JUDD, M.D.

Fellow in Surgery, Mayo Foundation
ROCHESTER, MINN.

Two terms should be defined at the outset. The first is "nonspecific," by which is meant "of unknown or undetermined origin." The second is "right portion of the colon," by which is meant "the cecum, ascending colon and hepatic flexure."

This study of surgical resection for nonspecific ileocolitis was prompted by a recent review of malignant lesions of the right portion of the colon. The present review is based on the records of 100 patients for whom the terminal portion of the ileum and the right portion of the colon were resected for nonspecific inflammatory disease. Resection in these 100 cases was performed by eleven different surgeons.

In an attempt to evaluate the results of possible surgical procedures, the cases were classified into the divisions of "stage operation" suggested by Lovelace and one of us (Mayo). This has been modified as in table 1.

AGE AND SEX

Of the 100 patients, 54 were men and 46 were women. The average age was 32.5 years. Thirty-two patients were found to fall in the group of operations in one stage, 64 in the group of operations in two stages and only 4 in the group of operations in multiple stages. The groups were somewhat similar as to sex and age, as shown in table 2.

SYMPTOMS

Symptoms had been present for an average of two and sixty-three one hundredths years, with a range of one week to eighteen years. The outstanding symptom was diarrhea. Some patients first had noticed a "lump in the right side." Sixteen patients knew they had a mass before they registered at the clinic. In 22 cases a mass was first reported here. As has been stated rather consistently in most papers dealing with this topic, the appendix had been removed recently in certain cases. Twenty patients had undergone appendectomy within one year of admission. In several instances the home physician had stated that "a disease condition" was detected in the ileocecal coil at the time of appendectomy.

The persistent discharge of serum, pus or fecal material from an appendectomy wound prompted many patients to request surgical intervention.

HEMATOLOGY

In contrast to the anemia reported in papers on malignant disease of the right portion of the colon, marked anemia was not a feature of this group of patients. Prolonged diarrhea with attendant chronic dehydration appeared to have produced hemoconcentration, giving relatively high blood counts, out of proportion to the obvious condition of the patients (table 3).

ROENTGENOGRAPHIC REPORTS

The roentgenographic reports in the majority of instances were highly accurate. In most instances the diagnosis was established clearly, and the extent of the

From the Division of Surgery, Mayo Clinic.
Read before the Section on Gastro-Enterology and Proctology at the
Ninety-Second Annual Session of the American Medical Association,
Cleveland, June 5, 1941.

disease process was well defined. Two or more attempts occasionally were necessary, and roentgenologic examination after a barium sulfate meal was employed as indicated. Some type of roentgenogram of the bowel was made in all but 9 cases. In 5 cases a report was rendered of "negative colon and terminal ileum"; in 2 cases the report was "carcinoma of the cecum." In these 7 cases the diagnosis was fully established at the time of operation. It must be remembered here that in certain of the "negative" cases the roentgenologist had suggested a roentgenologic examination after a barium meal but the clinician had deemed it superfluous in the face of definite surgical indications.

INTRAPERITONEAL VACCINATION

The true value of intraperitoneal vaccination remains difficult to determine. Some of the surgeons considered the vaccine unnecessary because of the inflammatory nature of the disease. In other cases the effect of a preexisting fistula was considered to be just as inhibitory to subsequent development of peritonitis as the injection of the vaccine might be. Antiperitonitis vaccine was employed in 34 of the cases, 24 of these being

TABLE 1.—Classification of Surgical Resection for Nonspecific Ileocolitis

1. One stage
Resection with primary ileocolostomy performed as
a. Side to side anastomosis
b. End to side anastomosis
c. End to end anastomosis
2. Two stage
First stage: Ileocolostomy performed as end to side or side to side anastomosis (with or without transection of ileum between the site of the ileocolostomy and the ileocecal valve)
Second stage: Resection, performed with
a. Closure of divided ends of ileum and colon (in presence of a side to side ileocolostomy performed in first stage of operation)
b. End to end anastomosis of divided ends of ileum and colon (in presence of a side to side ileocolostomy performed in first stage)
c. Closure of the end of the colon if an end to side ileocolostomy has been performed in the first stage
3. Multiple stage
First, exteriorization of the lesion, with or without immediate resection
Later, removal of the lesion (if not done at first operation) and application of crushing clamps to the spur left by the colostomy. The application of clamps is repeated as many times as may be indicated
Final stage: Closure of the colonic stoma

in the two stage group. In several of these the vaccine was not given until just before the second stage. This feature is in contrast to the beliefs of those surgeons who hold that the performance of the ileocolostomy already has conferred a degree of immunity.

The remainder of the preoperative preparation was closely similar to that for the series of malignant neoplasms of the right portion of the colon. In many cases longer hospitalization was the rule before operation. This appeared necessary to restore fluid, chemical and nutritional balance and also to afford an adequate observation period to rule out all other possible causes of fever. The only patients who were subjected to operation in less than three days of hospitalization were those for whom the correct diagnosis had not been established.

ANALYSIS OF SURGICAL PROCEDURES

Employing the classification mentioned previously, we scrutinized the various methods of attack in an attempt to evaluate them on the basis of results (tables 4 and 5).

Resection in One Stage.—There were 32 cases in which resection in one stage was performed. The

results indicate that when nonspecific inflammatory disease exists in the terminal portion of the ileum and the right portion of the colon the risk is greater when the disease is attacked by resection in one stage than when it is attacked by procedures in two or more stages. This is of special interest in view of the fact that, on an average, as indicated by a recent review, in the presence

TABLE 2.—Surgical Resection in Nonspecific Ileocolitis

Type of Resection	Male	Female	Average Age, Years
One stage.....	18	14	37
Two stage.....	35	29	31
Multiple stage.....	1	3	33

TABLE 3.—Surgical Resection in Nonspecific Ileocolitis

Cases *	Hemoglobin, Gm.			Erythrocytes, Millions		
	Less Than 7	7 to 11, Inclusive	12 and More	Less Than 3.5	3.5 to 4.4	4.5 and More
	5	39	55	5	40	39
	Average: 13			Average: 4.3		

* Includes only those cases in which values were obtainable.

of malignant lesions of the right portion of the colon the procedure in one stage had certain advantages over procedures in multiple stages from the standpoint both of mortality and of prognosis. When anastomosis and resection are performed in one stage, a reasonable additional safety measure is accomplished by leaving the transverse colon out as a retrograde colonic stoma proximal to the anastomosis. This may be closed later if and when indicated by the general condition of the patient.

Resection in Two Stages.—Sixty-four patients underwent resection in two stages. There were many factors

TABLE 4.—Surgical Resection in Nonspecific Ileocolitis: One Stage Resection (Thirty-Two Cases)

Type of Anastomosis	Cases	Witzel * Enterostomy, Cases	Average Post-operative Hospital Days	Deaths in Hospital	Causes of Death
End to end.....	4 (13%)	1	37†	1	Peritonitis
Side to side.....	18 (56%)	13	22	4	Peritonitis 2, embolism 1, superior mesenteric thrombosis 1
End to side.....	9 (28%)	2	27	2	Peritonitis
Not specified.....	1 (3%)	..	34	..	
Total or average..	32	16 (50%)	26	7 (Mortality rate 22%)	

* Whether or not to use the Witzel temporary enterostomy depends on the view of the individual surgeon. From the present review, no argument can be derived either to promote or to discourage its use.

† In two of these cases the ileum had become attached to neighboring organs (with perforation) and more than usual amount of surgical work was required, so that the results in figures are not quite representative.

which influenced the wait between the ileocolostomy and subsequent resection, so that the interval varied from one month to eleven years. This includes those cases in which the anastomosis was performed elsewhere and the patient was sent to the Mayo Clinic for resec-

tion. The average interval between stages was fourteen and four-tenths months.

Resection in Multiple Stages.—Only 4 patients underwent resection in multiple stages. The average stay in the hospital was fifty-nine days. There was one death in this group, caused by general peritonitis.

TABLE 5.—Surgical Resection in Nonspecific Ileocolitis:
Two Stage Resection (Sixty-Four Cases)

Type of Anastomosis	Cases	Witzel Enterostomy, Cases	Average Post-operative Hospital Days	Deaths in Hospital	Causes of Death
Side to side (ileum not divided)	39 (61%)	7*	37	2	Peritonitis 1, "general sepsis" 1
Side to side (ileum divided)	17 (26%)	1*	33	0	
End to side.....	8 (13%)	0	37	0	
Total.....	64	8 (12%)	36	2 (3% mortality rate)	

* All Witzel enterostomies but one were performed at second stage. Assumption: sudden strain about to be placed on existing anastomosis required more safety valve factor; also handling of intestine, freeing of adhesions and the like suggested that further precautions were needed.

Pathologists' Reports.—The diagnoses rendered by the pathologist are interesting from the standpoint of variation. Numerous pathologists gave the reports, and their variation was greatest prior to 1932 (table 6).

PROGNOSIS

Of 32 patients operated on by the one stage method, 7 died. If one wishes to compute this on a percentage basis, the mortality rate is 21.9 per cent. There are too few cases in any one type of resection in one stage from which to draw any conclusions.

Of the 25 patients who were dismissed to their homes, 24 were followed one to five years. Thirteen of the patients are classified here as "cured" and 7 as improved; 2 had a recurrence, 1 of whom died in the hospital, and 2 patients had died at home.

In the group of cases in which operation was performed in two stages, of 62 patients who were dis-

TABLE 6.—Pathologic Diagnosis of Resected Specimens in Nonspecific Ileocolitis

Type of Resection	Terminal Ileitis	Ileitis and Colitis	Nonspecific Inflammatory Condition	Granuloma
One stage, 32 cases....	12 (38%)	17 (53%)	1 (3%)	2 (6%)
Two stage, 64 cases....	23 (45%)	23 (36%)	6 (9%)	6 (9%)
Multiple stage, 4 cases	1 (25%)	2 (50%)	1 (25%)	
Total.....	42	42	8	8

missed to their homes, 57 were followed from one to five years. Twenty-six are classified as "cured," 19 as improved, 9 as not showing any improvement or being worse, and 3 as having died. Two of these patients died two years after operation and 1 nine months after operation.

The follow-up disclosed that the longer the patient survived after resection, whether it had been performed in one stage or more stages, the better the subjective and objective results appeared to be.

ABSTRACT OF DISCUSSION

DR. MAX THOREK, Chicago: Regional ileitis was first reported before the Royal College of Physicians of London in 1806 by Combe and Saunders. Crohn and his associates rediscovered it in 1932. Ileojunitis, described by Crohn and Yunich, differs clinically and roentgenologically from the terminal variety. It affects segments of bowel higher up. It is less frequent than terminal ileitis (one in ten). It is an ulcerative process of specific inflammatory type in which all the components of the intestinal wall participate, particularly the submucosa. Right-sided (regional) colitis was first described by Bargen. It is not difficult to recognize clinically or radiographically. Medical treatment is rarely successful. It may appear as a universal colitis, affecting all of the colon and rectum, or it may start at one point and extend in either direction. In the differential diagnosis, deficiency diseases and faulty fat metabolism come under consideration. Roentgen ray images are characteristic narrowed areas alternating with "skip area" dilatations. The "string sign" is most usually proximal to the ileocecal valve. Spontaneous cure is rather frequent; hence surgical intervention in the acute stages is contraindicated. Where the disease is truly regional, wide resection of the affected bowel in one stage is proper procedure. When the greatest part of the small intestine is more or less involved, surgical treatment is illogical. There is no specific treatment. Chemotherapy and roentgen therapy proved disappointing. Berg described an operation for right-sided ulcerative colitis which consists of multiple stage operations putting the diseased colon completely at rest. It is an ilcosigmoidotomy which permits later, if deemed advisable, a colectomy; it obviates operating in the presence of a discharging ileostomy wound. The operation seems well tolerated and has yielded gratifying results.

DR. BURRILL B. CROHN, New York: I note again in Drs. Mayo and Judd's paper that the trend of surgical opinion in ileitis is toward a two stage operation; that this procedure seems to show a lower mortality and apparently as good a clinical result over a long period of follow-up. Four weeks ago a group of surgeons at Mount Sinai Hospital presented a very favorable series of cases; Dr. Colp reported 43 successive two stage shortcircuiting operations for regional ileitis without a death, which is far superior to any of the earlier series of primary resections. The two stage operation comprises an anastomosis between the ileum and the transverse colon; it must definitely be understood that the ileum must be transected, because if the ileum is not transected the process will spread in an oral direction and the disease extend itself. That is a primary principle of any shortcircuiting operation. I noticed again in the authors' series of cases the same question Dr. Philip Brown was asked in Atlantic City: "In what percentage of the cases did you transect the ileum?" While in a high percentage of cases the ileum was transected, in the experience of Drs. Mayo and Judd it was not a universal procedure. That is important. Is the two stage operation always necessary? Definitely not. In the second stage of the procedure, performed after a long period, it was not unusual to find the original disease so well healed and scarred and inactive that we realized the futility of putting the patient through a second stage. If a first stage has been satisfactory and the patient's condition is excellent, to proceed further seems unnecessary. Several such patients have remained in excellent health with the omission of any second stage procedure. I should like to urge this view for serious consideration. There is no point in performing an unnecessary two stage operation if the condition of the patient after the first stage is so satisfactory, if the gain in weight and improvement of hemoglobin is so satisfactory as to show that the patient is undergoing a perfect recovery. A second stage procedure is indicated if fistulation persists, if fever is elevated, if the hemoglobin recedes and if there is continuous loss of weight.

A STUDY OF TUBERCULOSIS AMONG
STUDENTS OF NURSING

HAROLD L. ISRAEL, M.D.

H. W. HETHERINGTON, M.D.

AND

JOHN G. ORD, M.D.

PHILADELPHIA

A program for the early detection of pulmonary tuberculosis among students of nursing was instituted at the Philadelphia General Hospital in 1935. The present report deals chiefly with information which was obtained concerning the epidemiology of tuberculosis among students of nursing in a large general hospital.

The intracutaneous tuberculin test and roentgen examination were given to each student on admission to the training school. The students who failed to react to tuberculin on admission were retested every four months until a positive reaction was observed. Fluoroscopic examination of all positive reactors was made at four month intervals and roentgen examination was made if a lesion was suspected or demonstrated by use of the fluoroscope. In recent years it has proved more satisfactory to examine all students by means of the fluoroscope because the number whose reactions remained negative to tuberculin was small. In addition, film examination was made whenever respiratory symptoms, fatigue or loss of weight suggested the possibility of clinical tuberculosis, and a film examination of all students was made at the end of training. Periodic examinations were given only during the three years of the training course, but in the case of students who remained at the hospital after graduation as staff nurses the interval of observation was as long as five and one-half years.

The students included in this report comprise 643 white females entering the training school from September 1935 to September 1939. Slightly more than a third of the students were from rural districts of less than 2,500 population and an equal number were from cities of more than 100,000 population. The remaining students were from small towns and suburban communities. A fourth of the entire group were from Philadelphia. More than 90 per cent of the students were aged 17 to 21 years at the beginning of observation; the mean age was 19.8 years. A certificate of good health from a physician was required of all applicants for admission.

During the first six months of training a major portion of the students' time was devoted to work in the classroom and less than fifteen hours weekly was spent in supervised practice in the medical and surgical wards. During this preclinical period no time was spent in the tuberculosis department. In the remaining two and one-half years of the training course, the greater part of the students' time was devoted to nursing care of patients. Each student was assigned to the tuberculosis department for a period of one month. Exposure to tuberculous infection was not limited to this period, however, for not infrequently tuberculous patients are admitted to the general medical and surgical wards before the diagnosis which results in transfer to the tuberculosis department is established.

This study was aided by a grant from the Pennsylvania Department of Health, John J. Shaw, M.D., director.

From the Henry Phipps Institute of the University of Pennsylvania and the Department of Tuberculosis and the Nurses' Infirmary of the Philadelphia General Hospital.

Read before the Section on Preventive and Industrial Medicine and Public Health at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 4, 1941.

RESULTS OF TUBERCULIN TEST

On admission, a reaction to the first dose (0.00002 mg. of purified protein derivative of tuberculin) was found in 183, or 28.5 per cent, of the 643 students admitted, and a reaction to the second dose (0.005 mg. of purified protein derivative) in exactly the same number; the total number of reactors was 366, or 57 per cent. The negative reactors (43 per cent) were retested at four month intervals until a positive reaction was observed. The development of infection was extremely rapid: A positive reaction developed in 48 per cent of the negative reactors at the end of four months. At the end of the first year 85.9 per cent of those originally negative had given positive reactions, at the end of the second year 95.3 per cent and at the end of the third year 100 per cent. The rapid rate of infection indicates that exposure to tubercle bacilli was frequent. The diminishing increment of infection in the latter years of training, despite presumably even heavier exposure in the tuberculosis department, suggests that individual susceptibility may be a factor in determining the development of allergy. In 3 persons the reaction to repeated tests was negative, becoming positive only on the tenth test at the end of three years. The per-

Tuberculosis Attack Rate Among Nursing Students

Reaction to Purified Protein Derivative of Tuberculin on Admission	Number of Students	Number Developing Tuberculosis	Observation Years	Attack Rate per Hundred Observation Years
Negative.....	277	34 (12.3%)	625.0	5.43
Positive to 0.005 mg....	183	23 (12.6%)	379.2	6.05
Positive to 0.00002 mg..	177*	11 (6.2%)	408.2	2.70
Total positive.....	360	34 (9.4%)	787.4	4.32
Total at risk.....	637*	68 (10.7%)	1,412.4	4.81

* Six students reacting to 0.00002 mg. of purified protein derivative had minimal tuberculosis on their original film examination and have been excluded from consideration in this table.

sistence of a negative reaction in these students, after the majority of other students had long been infected, is a striking phenomenon.

RESULTS OF ROENTGENOLOGIC EXAMINATION
ON ADMISSION

Unhealed pulmonary tuberculosis was found on admission in 6 students (0.9 per cent). In each instance, the lesion was minimal in extent, and each of the students reacted to the first dose of tuberculin (0.00002 mg. of purified protein derivative).

Calcified foci, typical of healed childhood type tuberculous lesions, were observed in 59 students on admission. In each instance the diagnosis was confirmed by repeated fluoroscopic and roentgen examinations. Calcifications were observed in 39, or 10.6 per cent, of the 366 students who were tuberculin positive on admission, while similar lesions occurred in 20, or 7.2 per cent, of the 277 students who were tuberculin negative.

DEVELOPMENT OF TUBERCULOSIS

Excluding from further consideration the 6 students who had pulmonary lesions on admission, there were 637 students who may be considered to have undergone the risk of having tuberculosis develop.

Pulmonary infiltrations roentgenologically typical of tuberculosis were observed to develop in 62 (9.7 per cent). Since these 637 students at risk had been observed for a total of one thousand, four hundred and

twelve and four-tenths years, this represents an annual attack rate of 4.8 per cent. Confirmation of diagnosis by demonstration of tubercle bacilli in the sputum was possible in only a few instances, since in students with progressive disease treatment was instituted as a rule before clinical symptoms appeared. Examination of gastric washings was not feasible. The roentgenologic diagnosis, made according to generally accepted criteria, was confirmed in every instance by serial film examinations.

Pleurisy with effusion developed in 10 students. One had an asymptomatic pulmonary infiltration on admission. The pleurisy developed twenty-one months later. A pulmonary infiltration developed in another nurse four and four-tenths years after admission and massive pleurisy with effusion a year later. The remaining 8 students with pleurisy had no prior demonstrable tuberculous lesion; in one instance an infiltration appeared simultaneously and in another infiltration appeared six months after the pleurisy, while in the other 6 students, observed subsequently for an average

Tuberculous lesions, including both infiltrations and pleurisy, developed in 34 of the 277 students who had been tuberculin negative on admission. This represents an annual attack rate of 5.43 per cent. In the group originally reacting to the second dose of tuberculin (0.005 mg. of purified protein derivative), consisting of 183 students, tuberculous lesions developed in 22, an annual rate of 6.05 per cent. In the group of 183 students originally reacting to the first dose of tuberculin (0.00002 mg. of purified protein derivative), 177 were at risk, 6 having had tuberculosis on admission. Tuberculous lesions developed in 11, an annual incidence of 2.7 per cent. Combining the latter two groups, the annual attack rate in students originally tuberculin positive was 4.3 per cent as shown in the accompanying table.

Thus, although the results of the present study tend to agree with other studies that the incidence of tuberculosis is greater in negative and in slight reactors, the striking feature of this study is the smallness of the difference. Actually, the differences in incidence of tuberculosis among these various groups are not significant on statistical analysis.¹

TIME OF DEVELOPMENT OF TUBERCULOSIS

No tuberculous lesions appeared during the first four months of training, and only 3 developed during the second four month interval. The attack rate for the entire group rose rapidly thereafter, reaching a maximum in the second year of training; during the third year the attack rate began to decline. Our observation of graduate nurses was not carried out at regular intervals, and quantitative comparison with the attack rate among students is impossible; but the development of tuberculosis appeared to be considerably less common after graduation than before, possibly because in the more susceptible persons the disease had already developed.

The time of occurrence of tuberculosis differed distinctly in students tuberculin negative on admission and those who were tuberculin positive (fig. 1). In the former group, the lesions developed considerably earlier and the attack rate fell off sharply in the third year. Among students reacting to tuberculin on admission, the attack rate rose very slowly and reached its maximum in the third year of training.

The difference in behavior of students tuberculin negative and tuberculin positive on admission suggests that the small difference in incidence observed between the two groups was not due to chance but was indicative of a consistent, if slight, relation to the original tuberculin reaction.

TYPE OF TUBERCULOSIS

More controversial than the reports on the relative incidence of tuberculosis in negative and positive reactors are the reports on the anatomic character and clinical course of the disease in the two groups. In the present series, mediastinal or hilus lymphadenopathy sufficiently distinct to be definitely distinguished on fluoroscopic and film examination was observed in only 1 student. It appears significant that this was also the single instance in which disease was present prior to the development of a positive tuberculin reaction. The other lesions that developed were pulmonary infiltrations of reinfection type. Figures 2 and 3 show

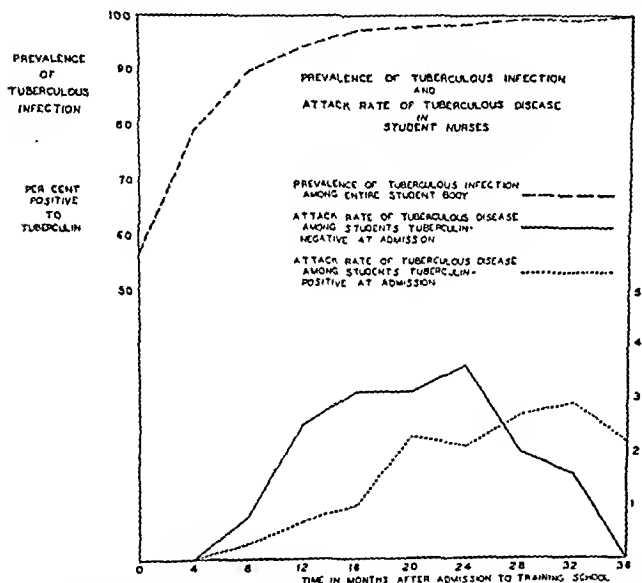


Fig. 1.—Prevalence of tuberculous infection, showing percentage of nurses positive to tuberculin, and the attack rate of tuberculous disease in students negative and positive to tuberculin on admission.

of two and one-tenth years, no infiltrations have developed.

Erythema nodosum was observed in 4 students. In 2 instances the attacks were associated with the development of a positive tuberculin reaction, and a tuberculous etiology might for this reason be suspected; but in the other 2 instances the students had been tuberculin positive on admission. Accordingly, in this study the diagnosis of tuberculosis has not been made on the basis of erythema nodosum alone.

Extrathoracic tuberculosis was not observed except for a perirectal abscess in 1 student who had an associated pulmonary lesion.

RELATION TO TUBERCULIN REACTION

In no instance was an infiltration typical of tuberculosis observed in a student who gave a negative reaction to the tuberculin test. One instance of mediastinal lymph node enlargement, however, was observed in a student who repeatedly failed to react. After nine months' observation a positive reaction was obtained in this student, and simultaneously a pulmonary infiltration with cavity was noted.

1. By chi square test, with Yates's correction.

that there was no appreciable difference in site of appearance of lesions between the groups originally negative and those positive to tuberculin.

It has proved possible to classify the clinical course of the lesions observed into four groups: rapidly retrogressive lesions, which resolved and scarred in a period

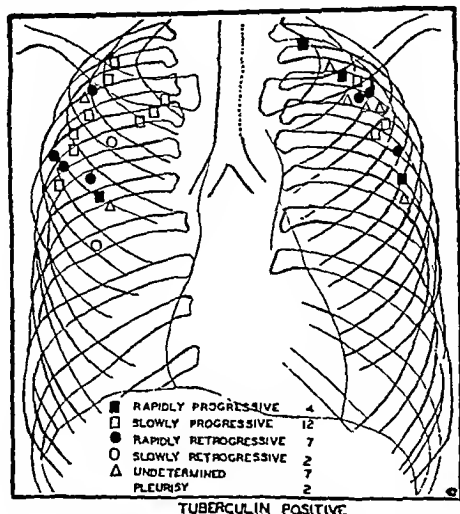


Fig. 2.—Site of appearance of lesions in 34 nurses tuberculin positive on admission to training.

of a few months with little or no treatment; slowly retrogressive disease, which scarred and contracted only after several years' observation; rapidly progressive lesions, which uninterruptedly extended, usually showing cavity formation within a few months, and slowly progressive lesions, which after intervals of stability of retrogression either finally progressed to advanced disease or remained unstable in appearance, more extensive than when first discovered. The type of disease was undetermined in 12 students in whom the period of observation was too short to ascertain the course.

Among students originally negative to tuberculin there developed 5 rapidly progressive lesions, 10 slowly progressive lesions, 6 rapidly retrogressive lesions and 3 slowly retrogressive lesions (fig. 3). Pleurisy without parenchymal infiltration occurred in 5 students of this group. Lesions among students originally reacting to the second dose of tuberculin were rapidly progressive in 2 instances, slowly progressive in 7 instances, rapidly retrogressive in 6 instances and slowly retrogressive in 1 instance. In 2 students of this group pleurisy with effusion developed. Among the students originally reacting to the first dose of tuberculin the disease was rapidly progressive in 2 instances, slowly progressive in 5 instances, rapidly retrogressive in 1 instance and slowly retrogressive in 1 instance. These differences are not significant except for the low proportion of retrogressive lesions in students originally reacting to the first dose of tuberculin.

In several cases, the lesion retrogressed rapidly to form a nodule. In none of these instances has the deposition of calcium been observed on roentgen examination.

RELATION TO AGE AND TO URBAN OR RURAL ORIGIN.

The mean age on admission of students in whom tuberculosis developed was 18.8 years, as compared to the average age of 19.8 years for the entire group.

However, those aged 22 to 31 years on admission, comprising 8.7 per cent of the total number of students, included 13.5 per cent of the students in whom tuberculosis developed.

The students have been classified into two groups according to residence at the time of admission to training school. Of the 230 students coming from rural areas (farms and villages of less than 2,500 population), 50.4 per cent were tuberculin positive on admission. Among urban students, 60.5 per cent reacted. The percentages in whom tuberculosis developed were almost identical, 10.7 among students from urban homes and 10.9 among students from rural homes. The annual attack rates were 4.6 per cent and 5.2 per cent respectively.

CLINICAL MANIFESTATIONS OF TUBERCULOUS INFECTION

The occurrence of vague, poorly localized symptoms among adults at the time of tuberculous infection has been described by numerous European observers,² and Scandinavian investigators³ have noted the frequency of abdominal symptoms so closely simulating appendicitis that laparotomy is often performed. A record has been compiled of the nonspecific respiratory, gastrointestinal and toxic or febrile illnesses occurring in the student nurses under observation. Only illnesses sufficiently severe to require admission to the infirmary or a roentgen examination of the chest have been included. It was found that 825 such illnesses occurred among the student nurses during a total of one thousand, two hundred and forty-six and two-tenths years of observation, representing an annual attack rate of 66.2 per cent, while the rate was almost twice as high, 130.4 per hundred students, during the four month period immediately preceding the development of a positive tuberculin test. Appendectomies were performed on 61 students, representing an annual attack

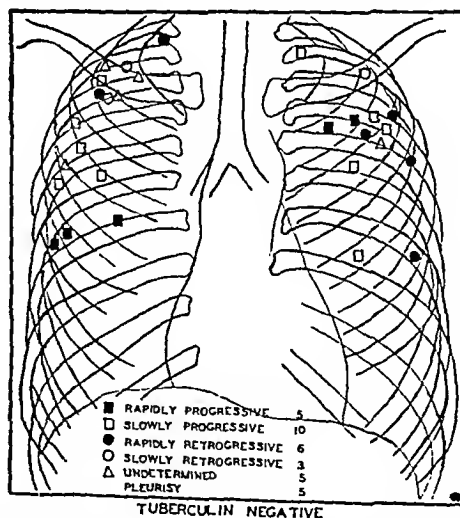


Fig. 3.—Site of appearance of lesions in 34 nurses tuberculin negative on admission to training.

rate of 4.9 per cent. Twelve of these appendectomies were performed during the four month interval preceding the occurrence of a positive tuberculin test, representing an attack rate of 14.8 per cent, three times

2. Rist, E.; Rey, P., and Tuchila, J.: La cuti-réactivité à la tuberculine chez les élèves de l'Ecole d'infirmières de la Salpêtrière, Bull. Acad. de méd., Paris 119: 52-63 (Jan. 11) 1938.

3. Holm, Johannes: Personal communication to the authors.

as high. That this high attack rate is not merely the result of the strain of entering training school is shown by the fact that the appendectomy rate among the positive reactors during the first eight months of training was not appreciably higher than the general average.

PRIMARY TUBERCULOSIS

The term "primary tuberculosis" has not been employed thus far in this report. We⁴ have pointed out in a previous report the confusion which attends this term. With serial tuberculin tests, as in the present study, it might appear possible to differentiate the primary and reinfection types or phases of disease with accuracy. Two difficulties occur, however. The first is the possibility that the students tuberculin negative on admission to the nursing school have been previously infected and have lost their sensitivity to the conventional doses of tuberculin without losing their acquired "immunity" in whole or in part. That this possibility is not negligible is indicated by the high percentage of tuberculin-negative students who had calcifications typical of healed tuberculous lesions. The second difficulty is the absence of criteria for determining how long after infection a developing lesion is to be considered "primary." Few investigators have ventured to define these limits. Burrell⁵ suggested that the lesions developing during the incubation period, i. e. the interval between infection and the development of allergy, be designated as "primary." This definition has been dismissed by the committee on nomenclature of the National Tuberculosis Association as unpractical because the number of lesions falling in this group is so small.⁶ Another guide to differentiation is suggested by Heimbeck's remark⁷ that the majority of primary lesions "occur shortly after infection and that the outermost limit is one year after the development of a positive tuberculin test." Heimbeck in his studies accordingly records observation of originally negative reactors only up to one year after the development of a positive test; subsequent observation of these individuals is recorded with the experience of those tuberculin positive. Adopting this scheme for classifying our observations, we find that 22 cases of tuberculosis developed among the tuberculin-negative reactors who were observed for a total of three hundred and eighty-one and one-tenth years, an annual attack rate of 5.78 per cent; in the remaining one thousand and thirty-one and three-tenths years in which positive reactors were observed, 46 cases developed, an attack rate of 4.46 per cent. This difference is not significant statistically. It should be recognized, however, that if the tuberculin-negative years are excluded, an extremely high incidence of tuberculous infiltrations and pleurisy is found during the year following the development of a positive tuberculin reaction. It also appears to be true that a difference in course of the disease exists between lesions appearing within a year after the development of a positive tuberculin reaction and lesions developing subsequently. Lesions in the former category were rapidly progressive in 4 instances, slowly progressive

in 5 instances, rapidly retrogressive in 6 instances and slowly retrogressive in 1 instance. The corresponding figures for the tuberculin-positive group were 6, 16, 7 and 4. The proportion of acute lesions, whether rapidly progressive or rapidly retrogressive, is considerably higher in the "primary" group, whereas the proportions of progressive and retrogressive lesions are similar in the two groups.

COMMENT

The use of fluoroscopy for the periodic examinations at four month intervals proved entirely satisfactory for clinical purposes. With 1 exception, all infiltrations were discovered at a minimal stage, before the onset of symptoms. Reliance on fluoroscopy for epidemiologic study, however, requires justification. We have shown in a previous study⁸ that the great majority of minimal tuberculous lesions can be detected by an experienced fluoroscopist. In the present study, the routine film examination on graduation provided a control whereby the accuracy of the routine fluoroscopic examinations could be determined. Only 2 previously undetected infiltrations were discovered by the final film examination, while in 4 instances fluoroscopic examination revealed infiltrations that, obscured by bony shadows, were unrecognizable in single films taken at a 6 foot tube-target distance and could be demonstrated only by stereoscopic films.

The development of pulmonary tuberculosis or pleurisy with effusion in 10.6 per cent of the students at risk, an annual attack rate of 4.81 per cent, is somewhat higher than the annual incidence (1.93 per cent) of clinical tuberculosis reported in student nurses at Bellevue Hospital⁹ and is slightly higher than the annual incidence (3.2 per cent) reported in student nurses at the Cincinnati General Hospital.¹⁰ In contrast to these figures, however, is the low incidence of tuberculosis observed to develop in young women of comparable age employed by the Metropolitan Life Insurance Company.¹¹ Annual fluoroscopic examination in the group aged 17 to 24 years, most of whom were clerical employees, revealed an annual attack rate of 0.32 per cent. It is possible that a higher incidence might have been found had the examinations been made at four month intervals, but it is probable that the increase would have been slight. An equally significant difference in incidence of tuberculosis between nurses and other women of similar age was found by Heimbeck in Norway.¹² These studies indicate that the incidence of tuberculous infection and the attack rate of roentgenologically demonstrable tuberculosis is far higher in the nursing students of a general hospital with a large tuberculosis service than in the population at large.

On the other hand, it is doubtful whether serious illness and death from tuberculosis are much more frequent in nurses than in other young women. We have pointed out in a study of young physicians that medical students with tuberculosis have a low death

4. Israel, H. L., and Long, E. R.: Primary Tuberculosis in Adolescents and Young Adults. *Am. Rev. Tuberc.* 43:42-55 (Jan.) 1941.

5. Burrell, in Report of the Tenth International Conference Against Tuberculosis, Lisbon, 1937, p. 373.

6. Diagnostic Standards, New York, National Tuberculosis Association, 1940.

7. Heimbeck, Johannes: Tuberculosis in Hospital Nurses, *Tubercle* 18:97-99 (Dec.) 1936.

8. Israel, H. L., and Hetherington, H. W.: Accuracy of Fluoroscopy in the Detection of Pulmonary Tuberculosis, *Am. J. M. Sc.* 201:224-232 (Feb.) 1941.

9. Riggins, H. M., and Amberson, J. B., Jr.: Detection and Control of Tuberculosis Among Nurses, *Am. J. Nursing* 40:1137-1144 (Oct.) 1940.

10. Welborn, M. B.: Incidence of Tuberculosis Among the Personnel of the College of Medicine, University of Cincinnati and the Cincinnati General Hospital, *J. Med.* 18:563-566 (Jan.) 1938.

11. Reid, A. C.: Control of Tuberculosis: 11. Pulmonary Tuberculosis in Employees, *J. Indust. Hyg. & Toxicol.* 22:402-415 (Nov.) 1941.

12. Heimbeck, Johannes: Incidence of Tuberculosis in Young Adult Women with Special Reference to Employment, *Brit. J. Tuberc.* 32:154-166 (July) 1938.

rate and exhibit considerably more resistance to the disease than is encountered in clinic or hospital patients with similar lesions.¹³ This high level of resistance is apparently shared to some extent at least by students of nursing. In the present series, which includes 68 students in whom tuberculosis developed and 6 students who had the disease on admission, there have been no deaths. One student has undergone thoracoplasty, 9 students have received pneumothorax treatment and 2 have received prolonged, sanatorium care; the remainder have received relatively brief periods of rest treatment or no treatment at all. In the treated as well as in the untreated, it is our impression that the course of the disease was much less severe than that observed in clinic patients with lesions equally dangerous in appearance. Presumably this greater resistance of nurses and medical students is the result of social and economic factors and because of prompt treatment rather than, as Brahdý¹⁴ has suggested, because most of the lesions occurring in nurses are primary and hence benign.

Whether the term "primary" tuberculosis is restricted to disease appearing within a year of the development of a positive reaction, or whether it is taken to include all disease appearing in students tuberculin negative at the onset of observation, it is clear that in the present study primary tuberculosis exhibited no characteristics of incidence, pathologic type or clinical course to distinguish it clearly from disease developing in students known to be long infected. The disease observed was neither especially malignant, as reported by Scandinavian investigators,¹⁵ nor unfailingly benign, as reported by Brahdý¹⁴ and Myers.¹⁶ Roentgenologically, the "primary" lesions differed perceptibly in 1 instance only from the infiltrations considered typical of the reinfection type. The classic complex of primary tuberculosis, seen so commonly in roentgenograms of children and of adult aborigines, and observed occasionally following primary infection in adolescent Negroes, is apparently rare in young white adults in this country. In our experience, the development of classic primary tuberculosis appears to be determined more by age-linked and racial factors than by the presence or absence of allergy to tuberculosis. Thus, a possible explanation for the differences in the character of the tuberculosis noted in American and Scandinavian nurses is suggested by Lurie's¹⁷ observations in an epidemiologic study of resistant and susceptible strains of rabbits. In the highly susceptible animals he found that lesions are of "primary type," even though preceded by immunizing procedures. In the highly resistant animal, lesions are anatomically of localized "reinfection type," regardless of whether previous infection has occurred, while in the animal of intermediate resistance the presence or absence of previous infection determines the development of reinfection types of lesions.

The more common occurrence of disseminated disease with high mortality and the relationship to prior tuberculin reaction noted in Scandinavian studies suggest that the students of nursing in those countries are of intermediate resistance, while the development of the reinfection type of disease with few extrapulmonary manifestations and no deaths, regardless of the previous status of the tuberculin reaction, observed in the present study, may be considered evidence that the majority of these young women are highly resistant to tuberculosis, by reason of genetic or, more probably, nutritional and environmental factors.

The observation that vague symptoms frequently accompany the development of a positive tuberculin reaction is of considerable practical interest. Extra caution should perhaps be exercised in the diagnosis of appendicitis in a person who is known recently to have given a negative reaction to tuberculin and who is known to be exposed to tuberculous infection.

The problem of tuberculosis among students of nursing should be neither minimized nor exaggerated. The rapid rate of infection and the high incidence of pleural and of pulmonary lesions demonstrate that the student of nursing in the general hospital encounters an unusual hazard from tuberculosis. The need for strict prophylactic measures for protection of hospital personnel is evident. On the other hand, as the result of social, economic and medical advantages, the immediate, and possibly the ultimate, mortality among nurses is low. A considerable proportion of the lesions regress without treatment, but this is equally true of disease appearing in students tuberculin positive and tuberculin negative on admission. No tuberculous lesion in an adult should be dismissed as benign merely because it is believed to be of primary type.

SUMMARY

1. Periodic examination with the tuberculin test and fluoroscopy was given to 643 students of nursing at the Philadelphia General Hospital. A rapid rate of infection was noted. At the end of four months, 48 per cent of those originally giving a negative reaction reacted to tuberculin, at the end of one year 85.9 per cent reacted and at the end of three years 100 per cent reacted.

2. A high incidence of pleurisy with effusion and of pulmonary infiltrations roentgenologically typical of tuberculosis was observed. The annual attack rate was 4.81 per cent, an incidence slightly higher than that reported in similar large general hospitals.

3. Serious illness from tuberculosis, however, was not proportionately frequent, and no deaths occurred, presumably in part because of prompt treatment.

4. Only slight differences in incidence and in anatomic character and distribution of tuberculosis as determined by roentgenologic examination were observed between students who had been tuberculin negative at the onset of observation and students who had been tuberculin positive on admission. Comparison of the subsequent clinical course of students in the two groups showed no difference in the proportions of progressive and retrogressive lesions.

5. The development of a positive tuberculin reaction was associated with a high incidence of nonspecific respiratory, gastrointestinal, febrile and vague toxic illness and with an especially high frequency of abdominal symptoms simulating appendicitis.

13. Hetherington, H. W., and Israel, H. L.: Tuberculosis in Medical Students and Young Physicians, *Am. J. Hyg., Sect. A* 31: 45-61 (March) 1940.

14. Brahdý, Leopold: Tuberculosis in Hospital Personnel, *J. A. M. A.* 114: 102-106 (Jan. 13) 1940.

15. Malmros, Haguin, and Hedvall, Erik: Studien über die Entstehung und Entwicklung der Lungentuberkulose, Leipzig, Johann Ambrosius Barth, 1938. Holm, Johannes, and Helweg-Larsen, P.: La réaction positive de Mantoux chez l'adulte est-elle la manifestation d'une immunité contre la tuberculose? *Acta tuberc. Scandinav.* 12: 373-387, 1938.

16. Myers, J. A.; Ch'iu, P. T. Y., and Steunkens, T. L., Jr.: Primary Infection in Adults: Its Clinical and Epidemiological Aspects, *Am. Rev. Tuberc.* 39: 232-235 (Feb.) 1939.

17. Lurie, M. B.: Hereditary Constitution and Tuberculosis: An Experimental Study, *Am. Rev. Tuberc.*, to be published.

ABSTRACT OF DISCUSSION

DR. H. C. STEWART, Cleveland: The topic selected is important to those whose primary interest is in hospital administration and also to those engaged in the study of tuberculosis and its control. The tuberculosis morbidity rate in this particular group seems rather high, being close to 5 per cent annually. Most of the studies of the occurrence of tuberculosis in household associate groups show this rate to be between 1 and 2 per cent annually among white persons. The group under discussion, however, is highly selected as to age, sex and occupation and is therefore not strictly comparable to a general population group. In this particular series, every nurse became infected with the tubercle bacillus before the expiration of her training period. Another point of interest is that the results obtained by tuberculin testing on entrance into training did not appear to be related to the development of tuberculous disease at a later time. Studies by Plunkett and his associates in New York State, reported a few years ago, show that a significant proportion of patients hospitalized in general hospitals for conditions other than tuberculosis have unrecognized active pulmonary tuberculosis. At ages above 15 years, 1.1 per cent of such patients had clinically significant pulmonary tuberculosis. In about one half of these cases tuberculosis was not suspected on admission to the hospital. Now, such information as was reported by Plunkett, and studies such as have been presented here, seem to indicate that there is a rather fertile field in general hospitals for the finding of cases of tuberculosis if it is possible to develop some practical way of examining adequately those adults who are hospitalized for any reason in general hospitals.

DR. GEORGE J. BOINES, Wilmington, Del.: I should like to ask the authors whether they have any definite suggestions about nurses in general hospitals; that is, what precautions nurses should take so that they may avoid contact with tuberculosis and the development of tuberculosis. Another question: My impression from previous literature on this subject is that nurses who are negative to the tuberculin test are more susceptible to the infection than those who are positive. My understanding from this paper is that there is very little difference between the two. I was wondering whether this difference is because of the smaller number of nurses examined by these authors or whether there is any difference in taking the tests; to what do they ascribe the difference?

DR. HAROLD L. ISRAEL, Philadelphia: The program for prevention of tuberculosis among the student nurses essentially follows two lines. The first is the detection in the general hospital of the patients who have tuberculosis. There are, as Dr. Plunkett has shown, a very large number of open cases of tuberculosis in the wards of most general hospitals, and the problem is to devise a method of inexpensive roentgen ray examination which can be applied to every person admitted to the wards, so that those who have tuberculosis can be speedily placed in a separate tuberculosis service. The second part of the program involves the prevention of infection of nurses in the tuberculosis service. It would appear that the same type of isolation technic should be practiced as is used with the acute infectious diseases. Possibly some slight, minor modifications can be made, but the essential principles of a strict, aseptic technic should be followed. The studies showing a much higher incidence of tuberculosis among students originally tuberculin negative have for the most part come from the Scandinavian countries. This may be due to the fact that tuberculosis is considerably more prevalent in those countries than in the United States, so that their tuberculin positive nurses are a more highly selected group of resistant persons. American studies tend to show that the incidence is only slightly higher among those originally negative to tuberculin. I think we can draw the conclusion that the importance of the reaction to the tuberculin in determining the development of tuberculosis has been exaggerated at the expense of other factors, genetic as well as environmental.

A BACTERIOLOGIC STUDY OF A
NEW SANIGENIC FLOORING

W. L. MALLMANN, PH.D.

Bacteriologist, Engineering Experiment Station, Michigan State College
EAST LANSING, MICH.

Epidermophytosis and plantar warts are diseases that are transmitted primarily through the contact of bare feet and contaminated floors. Thus floor sanitation is a problem in locker rooms, shower rooms and runways of swimming pools.

The commonly accepted procedure of control consists in placing footbaths containing antiseptic solutions in doorways to the swimming pool or shower rooms. By this means the feet are at least momentarily immersed in an antiseptic bath which undoubtedly removes organisms from the feet and also destroys many of them. When the footbath is the sole means of prophylaxis, the bather returns to his locker on contaminated floors and may reinfect his feet before dressing.

TABLE 1.—Number of Bacteria Removed from Specimens
of Cement Floor

Sample Number	Number of Bacteria Removed
1.....	7,300,000
2.....	3,600,000
3.....	6,820,000
4.....	2,400,000
5.....	2,310,000
6.....	6,430,000
7.....	7,490,000
8.....	4,800,000
9.....	2,630,000
10.....	1,980,000
11.....	3,200,000
12.....	1,460,000
Average.....	4,167,000

TABLE 2.—The Oligodynamic Action of Hubbellite on Various
Micro-Organisms as Demonstrated by Embedding the
Hubbellite in a Seeded Agar Plate

Test Organisms	Zone of Inhibition in Mm.
<i>Saccharomyces ellipsoideus</i>	9.0
<i>Escherichia coli</i>	6.0
<i>Penicillium italicum</i>	13.5
<i>Staphylococcus aureus</i>	7.5
<i>Epidermophyton interdigitale</i>	15.0

Realizing that reinfection may result from contaminated floors, many establishments as a routine wash all floors carefully and follow this with disinfection. Owing to the frequently continuous use of the locker rooms, showers and swimming pools, the cleaning and disinfection of the floor must be done at the end of the day's use. By this procedure floors become increasingly more contaminated during the day. Cleaning and disinfection function merely as a means of removing each day's increment of pollution; although they may lessen the extent of the contamination, they do not entirely eliminate the danger of floor transmission. That floors properly cleaned each night may carry large numbers of bacteria is demonstrated in table 1 showing the number of bacteria removed from the surface of a 4 inch square of a painted cement floor in a hallway between the showers and the locker rooms in a college gymnasium on different days.

The bacterial population ranged from a minimum of 1,480,000 to a maximum of 7,490,000, with an average of 4,167,000 bacteria.

The number of bacteria thus demonstrated on an apparently clean floor shows the inadequacy of terminal disinfection of floor surfaces as a means of foot-infection prophylaxis.

TABLE 3.—*The Lethal Action of Hubbellite Shown by Addition of Dry Fragments of Hubbellite into Water and Nutrient Broth, Respectively, Seeded with Various Micro-Organisms*

Test Organisms	Percentage Reduction of Organisms				
	1 Hr.	2 Hrs.	3 Hrs.	4 Hrs.	5 Hrs.
Water Menstruum					
<i>Saccharomyces ellipsoideus</i>	0	7	23	30	40
<i>Staphylococcus aureus</i>	0	16	31	49	68
<i>Escherichia coli</i>	0	4	17	34	51
<i>Epidermophyton interdigitale</i>	0	9	30	46	70
<i>Penicillium italicum</i>	0	33	61	75	91
Broth Menstruum					
<i>Saccharomyces ellipsoideus</i>	0	7	27	40	54
<i>Staphylococcus aureus</i>	0	32	58	86	97
<i>Escherichia coli</i>	0	4	21	44	72
<i>Epidermophyton interdigitale</i>	0	8	44	85	98
<i>Penicillium italicum</i>	0	20	64	83	90

There is plainly a need of a method of concurrent disinfection of the floor so that during use the floor surfaces exhibit an antiseptic or disinfectant action.

There has recently appeared on the market a new cement floor surfacing material containing cupric oxychloride called "hubbellite."¹ According to the manufacturer's claim, this flooring when wet releases a minute amount of a copper compound which exerts an oligodynamic action on bacteria in the water film on the floor surface. The antibiotic action of minute amounts of copper is well known, particularly for fungi. As the floor covering is being recommended for surfacing floors in locker rooms, shower rooms and runways of swimming pools, it is well to have available data relating to its possibilities as well as its limitations. This report presents the results of such a study.

Before any extensive work was conducted, a preliminary test was made to determine whether oligodynamic

TABLE 4.—*The Lethal Action of Hubbellite Demonstrated by Addition of Micro-Organisms to Water and Broth, Respectively, to Which Dry Fragments of Hubbellite Were Added Twenty-Four Hours Before the Tests*

Test Organisms	Percentage Reduction of Organisms			
	1 Hr.	2 Hrs.	3 Hrs.	5 Hrs.
Water Menstruum				
<i>Saccharomyces ellipsoideus</i>	34	64	70	76
<i>Escherichia coli</i>	32	56	70	78
<i>Penicillium italicum</i>	66	82	94	99
<i>Staphylococcus aureus</i>	38	57	74	95
<i>Epidermophyton interdigitale</i>	98	83	97	100
Broth Menstruum				
<i>Saccharomyces ellipsoideus</i>	28	44	69	73
<i>Escherichia coli</i>	24	34	68	76
<i>Penicillium italicum</i>	32	77	91	98
<i>Staphylococcus aureus</i>	87	99	100	100
<i>Epidermophyton interdigitale</i>	78	100	100	100

action could be demonstrated. Pieces of hubbellite were embedded into nutrient agar in Petri dishes seeded with various micro-organisms. The cultures were incubated for forty-eight hours and then examined

for the presence of zones of inhibition around the fragments of hubbellite. The results are presented in table 2. A yeast (*Saccharomyces ellipsoideus*), two bacteria (*Staphylococcus aureus* and *Escherichia coli*) and two molds (*Penicillium italicum* and *Epidermophyton interdigitale*) were used as test organisms. Zones of inhibition of from 6 to 15 mm. were observed. These data show that hubbellite does exhibit oligodynamic action.

A second series of tests were made to determine whether sufficient copper salts could be released in water and in the presence of organic matter to produce antibiotic action. Fragments of hubbellite were dropped into 30 cc. quantities of water and broth respectively, seeded with various micro-organisms. The number of surviving micro-organisms were checked at hourly intervals for five hours. The data are presented in table 3.

These studies reveal that, although no inhibitory action was evident in one hour's exposure, after two hours a distinct diminution in numbers occurred. After

TABLE 5.—*The Lethal Effect on Various Micro-Organisms of Menstruums in Which Hubbellite Was Placed Forty-Eight Hours Prior to Seeding but Removed Before Seeding*

Test Organisms	Percentage Reduction of Organisms				
	1 Hr.	2 Hrs.	3 Hrs.	4 Hrs.	5 Hrs.
Water Menstruum					
<i>Saccharomyces ellipsoideus</i>	19	24	33	35	40
<i>Escherichia coli</i>	4	15	23	33	34
<i>Penicillium italicum</i>	55	60	96	100	100
<i>Staphylococcus aureus</i>	33	65	75	98	100
<i>Epidermophyton interdigitale</i>	44	66	90	98	100
Broth Menstruum					
<i>Saccharomyces ellipsoideus</i>	39	45	56	63	70
<i>Escherichia coli</i>	0	8	25	53	67
<i>Penicillium italicum</i>	0	19	52	85	96
<i>Staphylococcus aureus</i>	0	24	35	65	69
<i>Epidermophyton interdigitale</i>	9	33	42	53	89

five hours' exposure the reductions in numbers varied from 40 per cent for *Sacch. ellipsoideus* to 91 per cent for *P. italicum*. The reductions in the presence of organic matter are not particularly different from those obtained in its absence. It is reasonable to expect that the dry material would not yield enough copper ions in one hour to exert germicidal activity. It is evident from these data that the fragments of hubbellite do yield in a reasonable period of time sufficient copper ions to exhibit germicidal activity.

To determine the germicidal activity of wet hubbellite, fragments were dropped into flasks of sterile water and sterile broth, respectively, twenty-four hours prior to the introduction of the test organisms. The data from this series of tests are presented in table 4. In this series, germicidal activity ranging from 32 to 98 per cent was obtained after one hour's exposure to the action of copper ions. The *E. interdigitale* in the absence and presence of organic matter was sharply reduced in one hour. In five hours the culture was completely destroyed. These results would indicate that the bacteria, molds and yeasts deposited on a wet hubbellite surface are destroyed.

To determine the amounts of action attributable to the ions already in solution, fragments of hubbellite were dropped into water and broth, respectively, and left for forty-eight hours prior to seeding with the test organisms. At the time of seeding the fragments

1. Hubbell, D. S.; J. Indust. & Engin. Chem. 29: 123-32 (Feb.) 1937; J. Am. Chem. Soc. 59: 215 (Jan.) 1937.

were removed so that additional ions of copper could not be introduced. Sharp reductions in numbers occurred in one hour in the water but not in the broth. That lethal doses were present is demonstrated by the

TABLE 6.—*The Lethal Effect on Various Micro-Organisms of Hubbellite Determined by Spreading the Test Organisms Suspended in Water on Blocks of Hubbellite*

Test Material	Initial Seeding	Bacterial Counts After Exposure	
		4 Hours	8 Hours
Epidermophyton interdigitale			
Glass plate . .	50,000	24,000	16,700
Cement . .		20,000	17,500
Hubbellite no 1		4,600	122
Hubbellite no. 2		1,100	8
Staphylococcus aureus			
Glass plate . .	32,000	17,200	9,100
Cement		16,400	9,600
Hubbellite no 1		940	11
Hubbellite no 2 . .		720	2
Escherichia coli			
Glass plate. . .	32,000	74,000	63,000
Cement . . .		69,000	51,000
Hubbellite no 1 . .		11,200	2,600
Hubbellite no 2		7,600	980
Eberthella typhosa			
Glass plate	102,000	41,000	30,000
Cement.		47,000	26,000
Hubbellite no 1 .		7,700	1,200
Hubbellite no 2		2,400	320
Penicillium italicum			
Glass plate . .	6,400	7,300	7,000
Cement . . .		5,300	5,000
Hubbellite no 1		156	11
Hubbellite no. 2 .		42	0

fact that at the end of five hours sharp reductions occurred. The fact that the rate of reduction was less than in previous experiments in which the fragments were left in the broth and water indicates that the hubbellite continued to give off copper ions as rapidly as they were used up in the killing of the test organisms.

The tests reviewed show definitely that fragments of hubbellite gradually liberate sufficient copper ions to effect destruction of bacteria, yeasts and molds when fragments of the material are submerged in liquids such as water or nutrient broth.

In the next series of tests, 8 inch tiles of hubbellite, ordinary concrete and glass were prepared. On the surfaces of these tiles were smeared bacteria and molds suspended in water and broth, respectively. To prevent evaporation and contamination with air each smear was protected with the cover of a Petri dish. The number of surviving organisms was determined by removing them by means of a moist sterile swab. Swabbings were made at the beginning and at the end of four and eight hour intervals. Three areas were prepared initially to allow the three examinations described previously.

When the bacteria and molds were suspended in nutrient broth (table 7) an increase in numbers occurred when they were smeared on glass and concrete tiles. When the organisms were smeared on hubbellite tiles, the rate of kill was practically as rapid and as effective as in the absence of organic matter.

To ascertain the effect of heavy organic suspensions, market milk was smeared on the tiles in the same manner as previously described. In four hours exposure on hubbellite tiles (table 8) bacterial counts fell from an initial count of 68,000 to 3,800 on tile 1 and to

102 on tile 2. On the concrete tile after eight hours the bacterial count had increased from an initial count of 69,000 to 380,000 bacteria. These data would indicate that floors made of hubbellite in dairies and kitchens would prevent the development of bacteria, whereas concrete floors would allow bacterial growth.

The antibiotic properties of hubbellite were determined practically by placing an 8 foot strip across a hallway in the college gymnasium between the showers and the locker room. By using this location all bathers had to travel over this floor. The amount of traffic over the hubbellite floor was exactly the same as over the adjacent control concrete floor. The floors were cultured by swabbing 4 inch squares with a sterile moist cotton swab. The number of organisms was determined by plating on dextrose agar for a total count; for mold content by plating on Sabouraud's agar. All plates were incubated at 37 C. The results are presented in table 9. An examination of these data shows that the bacterial count was always lower on the hubbellite floor than on the ordinary concrete floor. The mold counts on the

TABLE 7.—*The Lethal Effect on Various Micro-Organisms of Hubbellite Determined by Spreading the Test Organisms Suspended in Broth on Blocks of Hubbellite*

Test Material	Initial Seeding	Bacterial Counts After Exposure	
		4 Hours	8 Hours
<i>Epidermophyton interdigitale</i>			
Glass plate	72,000	128,000	200,000
Cement		112,000	254,000
Hubbellite no. 1		4,200	201
Hubbellite no. 2		2,200	74
<i>Staphylococcus aureus</i>			
Glass plate	96,000	171,000	498,000
Cement		163,000	121,000
Hubbellite no. 1		2,800	20
Hubbellite no. 2		3,100	600
<i>Escherichia coli</i>			
Glass plate	161,000	421,000	610,000
Cement		276,000	241,000
Hubbellite no. 1		9,600	1,100
Hubbellite no. 2		1,400	720
<i>Eberthella typhosa</i>			
Glass plate.	128,000	151,000	181,000
Cement		193,000	173,000
Hubbellite no. 1		6,400	820
Hubbellite no. 2		3,800	970
<i>Penicillium italicum</i>			
Glass plate	8,000	10,500	14,700
Cement		17,000	14,000
Hubbellite no. 1		112	0
Hubbellite no. 2		86	0

TABLE 8.—*The Lethal Action of Hubbellite on the Bacteria in Milk Shown by Smearing Blocks of Hubbellite with Milk*

Test Material	Initial Count	Bacterial Count After Exposure	
		4 Hours	8 Hours
Glass plate	68,000	177,000	427,000
Cement		161,000	200,000
Hubbellite no. 1		3,400	160
Hubbellite no. 2		2,400	102

hubbellite floor were extremely low, whereas on the ordinary concrete floor they were comparatively high. In three instances *E. interdigitale* was isolated from the concrete floor. All samples were obtained in the afternoons when the floors were bearing heavy traffic and all effect of the previous night's cleaning had disappeared.

These data do not prove that the use of hubbellite floors would entirely eliminate epidermophytosis or other infections of the foot which may be transmitted by contaminated floors, but they do demonstrate that the amount of contamination can be materially lessened on the floor and that the danger of infection of the feet is lessened accordingly.

I am of the opinion that, in gymnasiums using properly maintained footbaths supplemented by hubbellite floors on swimming pool runways, in locker rooms and in shower rooms, the danger of contracting floor-transmitted infections of the feet would be reduced to a minimum.

TABLE 9.—*The Incidence of Bacteria and Molds on Hubbellite Floor as Compared to the Adjacent Concrete Floor in a Runway Between a Locker Room and a Shower Room*

Date	Total Counts		Mold Counts	
	Hubbellite	Concrete	Hubbellite	Concrete
5/18/30.....	820,000	4,730,000	..	.....
5/21/30.....	435,000	3,800,000*	..	.....
5/24/30.....	680,000	6,400,000	..	.....
5/26/30.....	1,200,000	5,980,000	..	.....
5/29/30.....	890,000	7,300,000	12	265,000*
6/1/30.....	700,000	3,600,000	26	92,000
9/6/30.....	1,120,000	6,320,000	0	61,000
9/10/30.....	631,000	2,400,000	0	48,000*
10/20/30.....	426,000	3,260,000	26	67,000
11/2/30.....	737,000	6,340,000	111	109,000
11/7/30.....	153,000	2,180,000	0	40,000
11/11/30.....	162,000	1,174,000	12	52,000
11/16/30.....	734,000	4,210,000	132	92,000
11/21/30.....	432,000	3,080,000	212	38,000
11/26/30.....	363,000	2,111,000	27	24,000
12/4/30.....	62,000	1,620,000	12	21,000
12/13/30.....	128,000	2,730,000	9	38,000
12/20/30.....	221,000	2,976,000	128	71,000
12/28/30.....	84,000	1,200,000	0	23,000
1/4/40.....	174,000	3,600,000	170	86,000
1/8/40.....	131,000	2,100,000	26	12,400
1/12/40.....	51,000	1,360,000	14	8,300
1/16/40.....	186,000	2,500,000	84	34,000
1/28/40.....	89,000	2,500,000	130	46,000
1/30/40.....	72,000	3,000,000	240	51,000
2/4/40.....	71,000	4,200,000	25	36,000
2/7/40.....	109,000	3,700,000	306	84,000
2/10/40.....	56,000	1,087,000	117	39,000
2/13/40.....	341,000	1,400,000	630	31,000
2/16/40.....	212,000	2,600,000	89	29,000
2/18/40.....	428,000	2,200,000	126	86,000
2/22/40.....	561,000	4,300,000	432	83,000
2/29/40.....	640,000	6,200,000	510	120,000
Average.....	398,000	3,431,000	124	62,260

* Epidermophyton interdigitale isolated from the floor.

SUMMARY

1. Fragments of a floor covering called hubbellite introduced into water or broth suspensions of bacteria, yeasts and molds produced lethal effects.
2. When bacteria and molds were smeared on hubbellite tiles in the absence or presence of organic matter, lethal effects were obtained.
3. Under comparative conditions, a hubbellite floor showed lower bacteria and mold counts than ordinary concrete floors.
4. Epidermophyton interdigitale was isolated from ordinary concrete floors in the hallway of a locker room but not from the hubbellite floor.
5. The use of hubbellite floors is an aid in the control of floor-borne infections of the feet.

SIGNIFICANCE OF RISE OF NON-PROTEIN NITROGEN

IN MEDICAL AND SURGICAL JAUNDICE

KARL A. MEYER, M.D.

HANS POPPER, M.D.

AND

FREDERICK STEIGMANN, M.D.

CHICAGO

The increase of nonprotein nitrogen in the presence of jaundice has received relatively little attention in the diagnosis and management of icteric patients. High values of nonprotein nitrogen in the presence of icterus are usually not appreciated in spite of the fact that reports in the literature point to the comparative frequency of renal injury secondary to hepatic disease. Elevated levels of blood urea nitrogen in liver disease were reported by Wilensky,¹ Meyers,² Eiss,³ Schutz and his associates,⁴ Rowntree,⁵ Elsom,⁶ Hoesch⁷ and Nonnenbruch,⁸ among others. Wilensky⁹ found the incidence of increased urea nitrogen to be proportional to the severity of the disease and to the presence of complications. The presence of a high level of nonprotein nitrogen in Weil's disease is a well known fact.

A perusal of the literature¹⁰ reveals that a rise of the nonprotein nitrogen level in cases of jaundice is a significant sign. It not only indicates an associated renal injury but at times is the first indication of an aggravation of preexisting liver damage, or of the onset of secondary parenchymatous involvement in case of obstructive icterus. Hence it is surprising that while numerous liver function tests, some of which still remain sub judice, are repeatedly discussed in the differential diagnosis of jaundice, such a simple test as the determination of the nonprotein nitrogen of the blood is just as often not mentioned.

The question will arise which one of the different nitrogenous products if increased may have significance in the clinical evaluation. In animal experiments,¹¹ liver extirpation has led to a decrease of the urea level. In man, however, ambiguous results were obtained. In relatively few cases of liver damage is there a decided

From the Cook County Hospital, the Department of Surgery, Northwestern University Medical School, the Cook County Graduate School and the Department of Medicine, University of Illinois College of Medicine.

1. Wilensky, A. O.: Occurrence, Distribution and Pathogenesis of So-Called Liver Death and/or the Hepatorenal Syndrome, Arch. Surg. 38: 625-691 (April) 1939.

2. Meyers, S. G.; Brines, O. A., and Juliar, Benjamin: Acutely Ill Jaundiced Patients: Report of 21 Instances of Hepatic Icterus, 7 of Whom Had High Blood Nitrogen, Am. J. Digest. Dis. 2: 346-350 (Aug.) 1935.

3. Eiss, Stanley: Conservation of Hepatic Function in Gallbladder Operations: Precautionary Measures to Prevent "Liver Deaths," Ann. Surg. 98: 348-353 (Sept.) 1933.

4. Schutz, C. B.; Helwig, F. C., and Kuhn, H. D.: Contribution to Study of So-Called Liver Death, J. A. M. A. 99: 633-636 (Aug. 20) 1932.

5. Rowntree, L. G.: Certain Clinical and Terminal Pictures in Hepatic Disease, M. Clin. North America 13: 1399-1415 (May) 1930.

6. Elsom, K. A.: Renal Function in Obstructive Jaundice, Arch. Int. Med. 60: 1028-1033 (Dec.) 1937.

7. Hoesch, K.: Chemische Blutwerte bei echten Koma und komaähnlichen Zuständen Leberkranker, Ztschr. f. klin. Med. 117: 175-196, 1931.

8. Nonnenbruch, W.: Die klinische Bedeutung der Reststickstoffbestimmung und die extrarenalen Azotämien, Ztschr. f. klin. Med. 131: 524-545, 1937.

9. Wilensky, A. O.: Relation of Nitrogen Bodies of Blood to Surgical Problems in Liver and in Biliary Tract Disease, Arch. Surg. 14: 1222-1245 (June) 1927.

10. Koch, F.: Nierenfunktionsstörungen und Nierenveränderungen bei Leberkanen, Zentralbl. f. inn. Med. 53: 679-698, 1932. Weiser, J.: Zur Hepatorenephritis, Med. Klin. 32: 1524-1527 (Nov. 6) 1936. Rathery, F., and Dérot, Maurice: Recherches cliniques sur la créatinémie dans les néphrites, Bull. et mém. Soc. méd. d. hôp. de Paris 48: 709-714 (May 13) 1932.

11. Mann, F. C., and Magath, T. B.: Studies on Physiology of Liver, Am. J. Physiol. 65: 403-417 (July) 1923.

lowering of the urea level,¹² while in the majority of them high urea values are obtained. All workers, however, agree that the nonprotein nitrogen is usually increased.

For the past few years we have made this problem a part of our icterus studies on a large series of jaundiced patients from the medical and surgical services of the Cook County Hospital. The results to be reported are based on a total of 180 cases of jaundice divided into four groups and subdivided according to the highest reported nonprotein nitrogen level (table 1). The figures quoted do not deal with the postoperative stage, as the diagnostic value of the rise in nonprotein nitrogen is the one to which attention is being given. The feature of so-called liver death with hyperpyrexia, hepatorenal syndrome and the like¹³ supposedly following decompression of the liver does not form a part of this paper.

To evaluate the results in each group, the percentage of recovery and mortality was indicated. One has to consider, however, that the mortality is not due merely to the liver damage. In cases of cirrhosis intercurrent death is common, and in cases of malignant obstruction the tumor leads to a fatal outcome.

the nonprotein nitrogen occurs in acute hepatitis and cirrhosis at a time when the liver damage increases and the icterus deepens. In surgical jaundice (benign and malignant obstruction), a rise of the nonprotein nitrogen usually is preliminary to a secondary involvement of the liver parenchyma, as shown by other more complicated liver function tests (galactose, hippuric acid, cholesterol-ester ratio). In the latter type of cases, therefore, the increase of the nonprotein nitrogen may be an urgent indication for surgical removal of the obstruction.

The increase of the nonprotein nitrogen in disease of the liver, especially when there is involvement of liver parenchyma in surgical jaundice, is therefore of diagnostic value. The pathogenesis of this increase is not as yet established. On the one hand it may represent a manifestation of the so-called hepatorenal syndrome¹⁴ with kidney damage as the cause of the retention of the nitrogenous substances; on the other hand, it may exemplify the extrarenal azotemia. In the latter, the azotemia is due not to a primary pathologic condition of the kidney but to another pathologic process (heart disease, hypochloremia, intestinal obstruction, diabetic coma) in which the high nonprotein nitrogen is supposedly due to an increased supply of nitrogenous

TABLE 1.—Blood Nonprotein Nitrogen in Various Types of Jaundice, Showing Percentage of Recovery and Death*

Type of Cases	Nonprotein Nitrogen of the Blood														
	Normal					40-70					Over 70				
	Cases, Number	Death		Recovery		Cases, Number	Death		Recovery		Cases, Number	Death		Recovery	
		Number	Per Cent	Number	Per Cent		Number	Per Cent	Number	Per Cent		Number	Per Cent	Number	Per Cent
Hepatitis.....	29	1	3.4	28	96.5	19	3	16	16	84	6	4	66.6	2	33.3
Cirrhosis.....	19	8	42	11	58	13	6	46	7	54	7	5	76	2	21
Benign obstructive.....	24	2	8	22	92	17	2	12	15	88	1	1	100		
Malignant obstructive...	21	15	71	6	29	22	19	86	3	14	4	4	100		
Total.....	93	26	28	67	72	71	30	42	41	58	18	14	78	4	22

* The highest nonprotein nitrogen level in each case was taken.

As shown by table 1, a moderate increase in nonprotein nitrogen was present in 39 per cent and a high increase in 10 per cent of all cases. The mortality rate rises definitely with the rise in the nonprotein nitrogen level. This is especially apparent from the cases of acute hepatitis and benign obstruction, in which death is more often due to the liver damage itself. The mortality of 78 per cent in the cases of all groups in which there was a nonprotein nitrogen level of over 70 mg. per hundred cubic centimeters requires emphasis. Thus in the cases of acute hepatitis the mortality of 3.4 per cent in the group in which there is a normal nonprotein nitrogen rises to 16 per cent in that in which there is a moderate increase in nonprotein nitrogen and to 66 per cent in the group in which there is a nonprotein nitrogen of over 70 mg. Similarly, in benign obstruction the mortality percentage rises from 8 to 12 to 100 respectively.

The significance of the nonprotein nitrogen level as a prognostic sign in cases of jaundice is evident from table 1. It is further borne out by observations on individual patients on whom repeated determinations of the nonprotein nitrogen were performed. An increase of

substances, on the basis of a breakdown of tissue proteins in connection with dehydration and changes in the mineral metabolism.

There are references about renal disorders in cases of jaundice, and icteric nephrosis is described. There is no question that tubular degeneration is seen in jaundice.¹⁵ Nephrosis, however, does not lead to an increase of the nonprotein nitrogen. Hence the morphologic demonstration of the picture of icteric nephrosis does not answer our question. Furthermore, the microscopic picture in such cases does not reveal inflammatory processes of the glomeruli which might be responsible for filtration damage and consequent increased nonprotein nitrogen.

In order to investigate alterations of the glomerular function without underlying anatomic changes, urea and creatinine clearance was repeatedly studied in 16 cases of jaundice, of which 10 showed an increase of the nonprotein nitrogen up to 93 mg. per hundred cubic centimeters. In the surgical cases the examinations were repeated after operation. The endogenous creatinine clearance was considered as glomerular filtration rate.

12. Chasatzky, J. S.: Ueber den Reststickstoff des Blutes den N des Harnstoffes und der Aminosäuren des Blutes bei ... f. klin. Med. 105: 349-364, 1927. Nennenbruch, Syndrom und die hypostenurie-N, Klin. ... (July 8) 1939.
13. Heyd, C. G.: Liver Deaths in Surgery of Gallbladder, J. A. M. A. 97: 1847-1848 (Dec. 19) 1931. Boyce, F. F., and McFetridge, E. M.: So-Called "Liver Deaths": A Clinical and Experimental Study, Arch. Surg. 31: 105-136 (July) 1935.

14. Dérot, Maurice, and Dérot-Picquet, René: Les hépatonéphroses. Paris, J. B. Baillière et fils, 1936. Vague, Jean: Les hépatonéphroses aiguës, Paris, Masson & Cie, 1935. Pytel, A.: Zur klinischen Charakteristik der Hepatorenalen Syndromen, Wien. klin. Wchnschr. 50: 945-968 (June 25) 1937.
15. Thompson, L. L., Jr., Frazier, W. D., and Ravdin, I. S.: The Renal Lesion in Obstructive Jaundice, Am. J. M. Sc. 109: 325-332 (March) 1940. Stewart, H. L.; Cantarow, Abraham; Morran, D. E.: Renal Changes in Biliary Stasis and Decompression in Cats, Arch. Path. 19: 807-818 (June) 1935.

Although theoretically the basis of creatinine clearance is still not decided¹⁶ and the inulin clearance is, therefore, considered superior, for practical clinical purposes the creatinine clearance may be nevertheless sufficient.^{16a} Endogenous creatinine is filtered, not reabsorbed, and supposedly not secreted. Changes in the endogenous

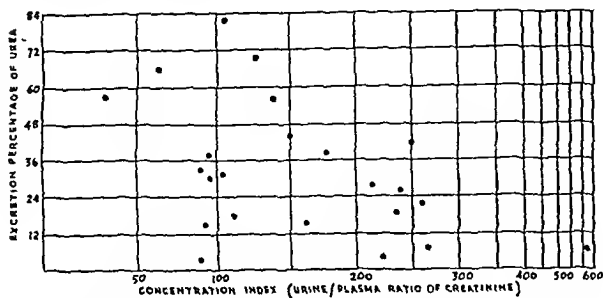


Chart 1—Semilogarithmic plot of urine plasma ratio of creatinine against excretion percentage of urea in cases of jaundice

creatinine clearance would therefore be considered a sign of glomerular alteration.

The behavior of urea, which is the chief constituent of the nonprotein nitrogen, is significant for the explanation of the increase of the nonprotein nitrogen even though the share of the urea nitrogen in the total nonprotein nitrogen varies. However, it is also questionable how much of the non-urea nitrogen passes in the urine.

The urea clearance is usually somewhat lower than the creatinine clearance, as part of the urea is reabsorbed in the tubular system. The ratio between the two clearances could be considered a measure of the urea reabsorption. If an increased breakdown of proteins is the chief cause for the increased nonprotein nitrogen, the urinary excretion of urea would be high. In the latter case, the urea clearance would be near the creatinine clearance, since reduction of the urea reabsorption would compensate for the increased supply.

PROCEDURE

The fasting patient was catheterized and a retention catheter instilled. The obtained sample of urine was discarded. After a noted time (about two hours) another specimen of urine was obtained. Blood was drawn during this time into an oxalated bottle. Plasma was quickly separated from the blood, and the urea and the creatinine content of plasma and urine and further the nonprotein nitrogen and the chlorides of the plasma were determined.

Creatinine was determined according to Popper, Mandel and Mayer¹⁷ and urea according to Koch.^{17a}

Creatinine clearance (glomerular filtration¹⁸) and urea clearance were calculated as urine-plasma ratio times urinary output per minute. As measurement of urea reabsorption, the excreted urea in percentage of the filtrate was figured from the urea clearance/creatinine clearance ratio times 100.

Evaluation of the obtained creatinine clearance levels shows them to be normal or moderately reduced, from 162 cc. to 60 cc. (26.8 cc. in 1 case). This reduction

of the glomerular filtration agrees with the results of Popper and Mandel¹⁹ and further with animal experiments and clinical studies of Hiratsuka.²⁰

Increase of the plasma creatinine is another sign of filtration damage.²¹ In our cases the plasma creatinine was generally normal or only slightly increased (except for one case in which there was a creatinine value of 2.04 mg. per hundred cubic centimeters), although the nonprotein nitrogen showed a definite increase. In 6 cases with an increased nonprotein nitrogen a normal creatinine value, i. e. below 1 mg. per hundred cubic centimeters, was encountered.

In cases of nephritis the increase of the plasma creatinine and the reduction of the glomerular filtrate is more pronounced than the corresponding rise in the nonprotein nitrogen. Our cases show in this respect similarity to the slight reduction of filtration in other extrarenal conditions as in cardiac patients.²² The relatively mild reduction of the glomerular filtrate in the group studied is therefore only partly responsible for the increased nonprotein nitrogen.

The urea clearance was relatively more reduced than the creatinine clearance. The ratio between urea clearance and creatinine clearance indicates the excreted

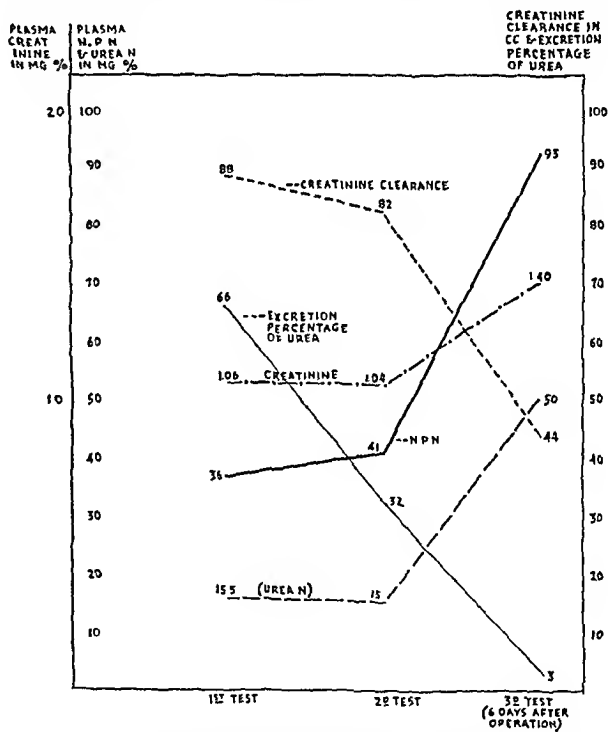


Chart 2.—Plasma nonprotein nitrogen, urea nitrogen and creatinine, creatinine clearance and excretion percentage of urea in a representative case of surgical jaundice with fatal termination after operation.

part of the filtered urea. If the ratio is low, as in our cases, the urea reabsorption in the tubular system is relatively high. Chasis and Smith²³ have shown that

16 Smith, W. W., Finkelstein, Norma, and Smith, H. W.. Renal Excretion of Hexitols (Sorbitol, Mannitol and Dulestol) and Their Derivatives (Sorbitan, Leomannide and Sorbide) and of Endogenous Creatininc-like Chromogen in Dog and Man, *J. Biol. Chem.* **135**: 231-250 (Aug.) 1940.

16a Steinitz, Kurt, and Türkand, Hüsni: The Determination of the Glomerular Filtration by the Endogenous Creatinine Clearance, *J. Clin. Investigation* **19**: 285-298 (March) 1940.

17 Popper, Hans, Mandel, Emil, and Mayer, Helene. Zur Kreatininbestimmung im Blut, *Biochem. Ztschr.* **201**: 354-367, 1937.

17a. Koch, F. C.: Practical Methods in Biochemistry, Baltimore, William Wood & Co., 1935, pp. 121-122.

18. Rehberg, P. B.: Studies on Kidney Function. I. Role of Filtration and Reabsorption in the Human Kidney, *Biochem. J.* **20**: 447-460, 1926.

19. Popper, Hans, and Mandel, Emil. Filtrations und Resorptionsleistung in der Nierenpathologie, *Ergebn. d. inn. Med. u. Kinderh.* **53**: 685-794, 1937.

20. Hiratsuka, Gumpire: Ueber die Veränderungen der glomerularen Filtration und tubulären Rückresorption der Niere bei Lebenskrankheiten und experimentellen Lebensbedingungen, *Tohoku J. Exper. Med.* **31**: 232-246, 1937.

21. Popper, Hans, and Brod, Jan: Die physiologischen Schwankungen der Nierenarbeit, *Ztschr. f. klin. Med.* **134**: 196-223, 1938.

22. Popper, Hans, Mandel, Emil, and Mayer, Helene. Die diagnostische Bedeutung der Plasma Kreatininbestimmung, *Ztschr. f. klin. Med.* **133**: 56-77, 1937.

23. Chasis, Herbert, and Smith, H. W.. Excretion of Urea in Normal Man and in Subjects with Glomerulonephritis, *J. Clin. Investigation* **17**: 347-358 (May) 1938.

the urea reabsorption depends on the concentration of the urine, as indicated by the urine-plasma ratio of a not reabsorbable substance (inulin). The same significance has—as shown by Steinitz and Türkand^{23a}—the urine-plasma ratio of endogenous creatinine. Arkin and Popper,²⁴ using the creatinine method, found the same relation between urea reabsorption and urine concentration. They observed a high excretion percentage and consequently a low urea reabsorption in cases in which there was anatomic renal damage. Chart 1 shows in comparison with the graph of Arkin and Popper that the excretion percentage is mostly in the lower ranges and that consequently the urea reabsorption is relatively high in the cases of jaundice in which examinations were made. The concentration power as measured by the urine-plasma ratio of creatinine shows no deviation from the normal. This fact does not indicate a hypostenuria as the reason for the increase of the nonprotein nitrogen. Chart 2 shows the behavior in a representative case in which, parallel with a downhill course, the excretion percentage of urea decreases and the urea reabsorption increases. This case does not fit in with those described as typical liver death, as first hyperpyrexia was absent and secondly the finding at operation (biliary cirrhosis due to prolonged obstruction) could explain the gradual downhill course of this patient. Whether the same mechanism holds for real liver death has to be studied. The blood chloride level in the cases in which examinations were made was relatively low but never reached the low level of real hypochloremia.

The results offer no indication for an increased nitrogen supply to the blood as reason for the increased nonprotein nitrogen. They suggest an increased reabsorption of urea in cases of liver damage. Whereas in kidney damage a resorption uremia²⁵ could be excluded in accordance with Smith,²⁶ this possibility remains for

comparison with the slightly reduced creatinine clearance. As the latter is considered a measure of the glomerular filtration, an increased reabsorption of urea in the tubules is to be assumed. This case being more developed supports the hypothesis that the high nonprotein nitrogen in jaundice is due less to filtration damage than to increased reabsorption of nitrogenous substances, through the damaged tubular barrier.

SUMMARY AND CONCLUSIONS

The nonprotein nitrogen of the blood is increased in cases of both medical and surgical jaundice of severe involvement. The increase is more pronounced in cases in which there is a fatal outcome.

The determination of the nonprotein nitrogen is of diagnostic and especially prognostic value in such cases, as it points to an aggravation of a parenchymatous jaundice and to the appearance of a secondary liver damage in cases of obstructive jaundice. Increase of nonprotein nitrogen in a case of surgical jaundice suggests an early operative intervention.

The increased nonprotein nitrogen is to some extent explained on the basis of a reduction of glomerular filtration, but to a greater extent it is due to increased reabsorption of urea in the kidney tubules.

An increased breakdown of protein as a cause of the increased nonprotein nitrogen is not evident from our experiments.

Clinical Notes, Suggestions and New Instruments

PEMPHIGUS FOLIACEUS-LIKE ERUPTION FOLLOWING USE OF SULFANILAMIDE AND SULFAPYRIDINE

MAX S. WIEN, M.D., AND EUGENE P. LIEBERTHAL, M.D., CHICAGO

The increasing use of sulfanilamide, sulfapyridine and related compounds by physicians and their description in the lay press with subsequent indiscriminate, uncontrolled use by the public emphasize the important need for the medical profession to be on the lookout for toxic manifestations occurring as a result of the use of these preparations by both the physician and the public. While it is intended that the public be impressed with the fear of toxic reactions in order to avoid the baneful sequelae which might result from the indiscriminate use of the sulfonamides, on the other hand a thorough knowledge of what reactions to expect and the recognition of them will help dispel the fear of toxic effects on the part of the physician, thus giving him a feeling of greater security in the use of these valuable new chemotherapeutic agents. The physician's knowledge of the reactions and his early recognition of them will inspire greater confidence in the employment of these drugs and insure the patient the great therapeutic benefit to be derived from the use of the sulfonamides, when it is indicated, under properly controlled observation. The present discussion deals chiefly with the toxic cutaneous manifestations, with a brief reference to some of the other manifestations of toxicity and with the report of a case of toxic dermatitis together with the changes noted at autopsy.

The earliest toxic manifestations observed after use of the sulfonamides were referable to the nervous system and were thought to be the result of central action of the drugs; they consisted of dizziness, headache and ringing of the ears.¹

It is important to determine, if possible, the patient's previous experience with sulfanilamide or its derivatives or whether an allergy exists to a group of drugs in general, such as arsenicals, bismuth compounds, the barbiturates or the coal tar analgesics.^{1a}

From the Dermatologic Service of the Michael Reese Hospital.
1. Long, P. H., and Bliss, Eleanor A.: The Clinical and Experimental Use of Sulfanilamide, Sulfapyridine and Allied Compounds, New York, The Macmillan Company, 1939.
1a. Abramowitz, E. W., and Russo, J. J.: Fixed Eruption from Magnesium Hydroxide: Polysensitivity, Arch. Dermat. & Syph. 41: 707 (April) 1940.

TABLE 2.—Blood Chemistry, Glomerular Filtration, Urea Excretion Percentage, During the Recovery in a Case of Hypochlorazotemia*

Date	Plasma			Urine Plasma Ratio of Creatinine	Glomerular Filtration	Excretion Percentage of Urea
	Non-protein Nitrogen	Chlorides	Urea Nitrogen			
7/13	187	310	112.5	6.72	18.5	6.5
7/15	171	355	101.3	4.37	19.8	18.1
7/19	124	495	50.0	2.32	28.3	48.0

* A Negro aged 28, admitted in comatose stage with a history of severe gastroenteritis (vomiting and diarrhea). There was gradual improvement on chloride therapy.

the extrarenal azotemia. McCance and Widdowson²⁷ showed disorganization of the renal function in diabetic coma, the breakdown of the barrier function of the tubules being responsible for the backflow of the nitrogenous substances. A trend in this direction was found in our cases and may be brought in relation to the tubular changes as seen microscopically.

We had the chance to examine 1 patient with hypochlorazotemia following gastroenteritis with complete recovery. Again the urea clearance is extremely low in

24. Arkin, Aaron, and Popper, Hans: Urea Reabsorption—Relation Between Creatinine and Urea Clearance in Renal Disease, Arch. Int. Med. 65: 627-637 (March) 1940.

25. Ferro-Luzzi, G.: Die Nierenfunktion im Lichte moderner Anschauung: Studien über die Tubulifiltration, Ztschr. f. exper. Med. 94: 708-721, 1934.

26. Smith, H. W.: Studies in the Physiology of the Kidney: Porter Lectures Series IX, University Extension Division, University of Kansas, Lawrence, Kan., 1939.

27. McCance, R. A., and Widdowson, E. M.: Functional Disorganization of the Kidney in Disease, J. Physiol. 95: 36-44 (Sept.) 1938.

The toxic cutaneous reactions may manifest themselves as an angionurotic edema, or as an erysipelas-like, an erythematous, a morbilliform or an erythema nodosum-like eruption.² Exfoliative dermatitis and petechial, purpuric or scarlatiniform eruptions also may be seen. The eruption may be localized or may involve the entire body and may or may not be accompanied by itching. Bullous eruptions and bullous stomatitis following therapy with sulfanilamide³ have been reported, and the case here reported is that of a pemphigus foliaceus-like eruption occurring as a sequela to the use of sulfanilamide and its derivatives in the treatment of mastoid sepsis.

Epstein³ stated "It is interesting that sulfanilamide may lead to the development of tense bullae on apparently normal skin, in association with definite constitutional symptoms." He stated further that the individual bullae on the right hand and

REPORT OF CASE

A Jewish man aged 47 was admitted to the ear, nose and throat service of Michael Reese Hospital with acute otitis media and mastoiditis on the left side. He was treated conservatively on admission, then given sulfanilamide from November 18 to November 27, after which a generalized morbilliform eruption developed. On November 30, three days after the drug had been discontinued, the eruption had practically receded, and a simple mastoidectomy was performed. The patient was then transferred from the hospital to a convalescent home, and about December 18 a generalized malodorous dermatitis with exfoliation developed. He reentered the hospital and was transferred to the dermatologic service. He appeared acutely ill on admission, and his skin presented a generalized light brown pigmentation with large, flake-like, moist exfoliation superimposed

The Clinical Toxic Manifestations of Sulfanilamide, Sulfapyridine and Sulfathiazole with the Time of Their Appearance in the Course of Therapy

Toxic Manifestations	Sulfanilamide	Sulfapyridine	Sulfathiazole
Nausea and vomiting	Uncommon, occurs early	Very frequent, occurs early	Rare
Dizziness	Common, occurs early	Common, occurs early	Uncommon
*Psychoses	Rare, occurs early	Not reported	Not reported as yet
*Neuritis	Rare, generally early	Not reported	Not reported as yet
Cyanosis	Very common, occurs early	Faint, common, occurs early	Uncommon, occurs early
Acidosis	Common if sodium bicarbonate is not given, occurs at any time	Not reported	Not reported as yet
*Fever	Common, generally 5th to 9th day, may occur from 1st to 21st day	Uncommon, generally 5th to 9th day, may occur from 1st to 21st day	Common, 5th to 9th day
*Rash	Common, may take almost any form, generally 5th to 9th day, may occur 1st to 21st day	Not very common, generally 5th to 9th day, may occur 1st to 30th day	Very common, generally 5th to 9th day
" "	Rare, early or late	Rare, early or late	Not reported as yet
" "	Not reported	Common, 1st to 10th day	Common, 1st to 10th day
" "	Not reported	Not uncommon, 2d to 14th day, blood pressure and fundi normal	Not uncommon
†Acute leukopenia with granulocytopenia	Not common 1st to 10th day	Common, especially in children, 1st to 10th day	Not uncommon, 3d to 10th day
†Agranulocytic angina	Uncommon, generally between 17th to 23th day, may occur 14th to 40th day	Uncommon, generally between 17th and 23th day, may occur 14th to 40th day	Not reported as yet
*Hyperleukocytosis	In presence of acute hemolytic anemia	In presence of acute hemolytic anemia	Not reported as yet
Mild hemolytic anemia	Very common, early and late	Common, early and late	Not reported as yet
*Acute hemolytic anemia	Common, especially in Negroes, generally 1st to 5th day	Uncommon, generally 1st to 5th day	Reported as occurring
†Purpura hemorrhagica	Rare	Rare	Not reported as yet
*Injection of sclerae and conjunctivas	Not reported	Not reported	Common, especially in conjunction with rash and fever, 5th to 9th day
Visual disturbances	Rare	Rare	Not reported as yet
†Jaundice	With hepatitis or acute hemolytic anemia	Rare	Not reported as yet
*Painful uric acid	Reported	Not reported	Reported with rash
" "	Rare	Not reported	Not reported
" "	Bleeding rare, diarrhea uncommon	Bleeding reported	Not reported

* Best to stop drug and force fluids

† Imperative to stop drug and force fluids

forearm of his patient were clinically indistinguishable from those seen in pemphigus. The appearance of the first bullae in the mouth in certain cases of pemphigus is well known to all who have observed this disease, and Loveman and Simon⁴ reported a case of stomatitis due to sulfanilamide in which there was an associated bullous lesion on the thenar eminence.

From these reports it is evident that there is a similarity between certain elements in the syndrome of pemphigus and those occurring as a sequela to the administration of sulfanilamide for therapeutic purposes. It is, then, conceivable that a severe toxic reaction due to sulfanilamide may occur with generalized involvement of the skin simulating pemphigus, and in the case here reported a patient who had received large doses of sulfanilamide for mastoid sepsis subsequently showed a generalized malodorous dermatitis with exfoliation, the development of tense bullae on the trunk and extremities and a septic picture simulating that seen in pemphigus. We therefore feel justified in reporting this case as a pemphigus foliaceus-like toxic eruption following the administration of sulfanilamide.

The room was permeated with a musty odor such as is frequently noted in the presence of pemphigus. He had a febrile course from December until May and received soothing local applications but no more sulfanilamide. During January and February the patient received a total of 500 cc of human serum intravenously.

On January 27 the exfoliative process began to improve, and the improvement continued, so that on February 4 there was almost complete involution of the toxic cutaneous eruption, but the brown pigmentation remained. The patient was up and about during the middle of February, showing constant improvement in his physical condition, but during this period several bullae the size of a dime appeared on the right side of the chest near the nipple and on the right hip over the trochanteric area. These bullae ruptured, leaving raw, oozing surfaces. Subsequently, groups of bullae appeared over both midscapular areas, and new bullae appeared on the inner side of the right arm, on the wrist, on the midlumbar region and on the malleoli. The patient was in a denutritive state, and human serum and a 10 per cent solution of dextrose were administered intravenously. The patient was kept on supportive therapy and seemed to be following an uneventful course toward recovery, with a gain in strength and a desire for food; he

² Loveman A. B., and Simon, Frank. Erythema nodosum from Sulfanilamide. *J. Allergy* 12:28-33 (Nov.) 1940.

³ Epstein Frim. Bullous Eruption Following Sulfanilamide. *Arch. Dermat. & Syph.* 41:61-63 (Jan.) 1940. Loveman and Simon.

⁴ Loveman A. B., and Simon, Frank. Fixed Eruption and Stomatitis Due to Sulfanilamide. *Arch. Dermat. & Syph.* 40:29-34 (July) 1939.

was able to be up and about in his room May 20. The elevation in temperature suddenly recurred; examination of the chest revealed much moisture at the bases of the lungs, and the patient died that evening with severe dyspnea.

Autopsy was done by Dr. Otto Saphir, and the changes observed post mortem as reported by him were abscess of the lower lobe of the left lung, with peripheral bronchopneumonia and overlying adhesive pleuritis; bronchopneumonia and old adhesive and obliterative pleuritis of the right lung; tuberculosis (caseous and calcific) of the tracheobronchial lymph nodes; calcification of the mesenteric lymph nodes; brown atrophy of the heart; pulmonary emphysema and edema; diffuse hemorrhagic cystitis; severe cystitis cystica; chronic passive hyperemia of the liver and kidneys, fibrosis of the spleen; an extrarenal pelvis and extrarenal major calices in both kidneys; occlusion of the proximal part of the right ureter at the uretero-pelvic junction; multiple, extensive decubital ulcers; meningeal hyperemia; a solitary hematoma of the liver, and a small hematoma in the submucosa of the small intestine.

With the extremely wide use of the sulfonamide compounds, it is natural that the reports of toxic eruptions should increase, and it is important that the variations of these toxic manifestations, as they appear on the skin, be well known to all who employ the drugs so that the incidence of progressive, lethal, toxic reactions will be reduced and that the physician will be aware of the early cutaneous manifestations of toxic reactions and thus stop giving the drugs in the early stages of these reactions before a profound change has occurred in the skin or the internal organs.

Gelling⁵ has recently discussed the therapeutic applications of sulfanilamide and its allied compounds. At a lecture by Dr. Perrin Long, delivered in Washington, D. C., May 15, before the Pan American Scientific Congress, Long presented the résumé of clinical toxic manifestations as given in the accompanying table, which we have taken from Gelling's article.⁵

COMMENT

We agree with Maher,⁶ who said: "We have here [in the sulfonamides] a group of drugs which have offered marvelous powers of healing in a group of infectious diseases for which we previously had little in the way of treatment—a group of drugs, however, which possesses a definite and poorly understood power to harm patient as well as organism, and concerning which much remains to be explained. It seems evident that sulfanilamide is still the drug of choice in streptococcal infections, with sulfapyridine of some value in both experimental streptococcal and staphylococcal infections, but primarily of value in the pneumonias. Preliminary work by Barlow and others justifies hope for clinical value for the thiazol derivatives in treating staphylococcal infections, and Dr. Grubitz's preliminary paper ascribes promising value to the use of sodium paranitrobenzoate in treating *Streptococcus viridans* infections, at least experimentally. Considerable care and control in the handling and administration of these drugs is clearly necessary. It seems clearly apparent that continued cooperative effort between the clinician, the pathologist, the bacteriologist and the pharmacologist is necessary to the reduction of therapeutic accidents, as well as to the full realization of the clinical value inherent in the sulfonamides."

SUMMARY

A generalized type of cutaneous reaction following the use of sulfonamide preparations was seen. These drugs have great power to harm the patient, and there is a necessity for the trained user of them to recognize the varied cutaneous pictures which visibly indicate a toxic reaction, so that the physician may promptly stop the use of the drugs and prevent baneful sequelae. The toxic reactions other than cutaneous ones are not dealt with in this paper, although Long's summary of toxic manifestations, presented in tabular form, should be given consideration and study.

104 South Michigan Avenue.

5. Gelling, E. M. K.: Therapeutic Applications of Sulfanilamide and Allied Compounds, Illinois M. J. 78:404 (Nov.) 1940.

6. Maher, F. T.: The Chemistry of the Sulfonamides, Illinois M. J. 78:397 (Nov.) 1940.

Special Article

GLANDULAR PHYSIOLOGY AND THERAPY

THE PANCREAS AS AN ORGAN OF INTERNAL SECRETION

E. T. WATERS, B.Sc., PH.D. (WALES)
AND

C. H. BEST, D.Sc. (LONDON), M.D., F.R.S.,
F.R.C.P. (CANADA)
TORONTO, CANADA

This special article is published under the auspices of the Council on Pharmacy and Chemistry. It is one of a series which will be published in book form as the second edition of "Glandular Physiology and Therapy." The opinions expressed in this article are those of the authors and do not necessarily represent the views of the Council.—Ed.

Removal of a dog's pancreas produces in that animal a series of metabolic changes which are strikingly similar to those of severe diabetes mellitus in human subjects. No less definite is the speedy elimination of these abnormalities in both the depancreatized dog and the patient with diabetes following the injection of insulin, which is obtained from normal pancreatic tissue. The observations on the effects of pancreatectomy, made by von Mering and Minkowski,¹ and those on the effect of insulin on depancreatized dogs, made by the group in the department of physiology of the University of Toronto,² provided very good evidence for the association of the pancreas and its internal secretion with the condition of diabetes. These salient facts have been added to extensively during the last few years. Some of the additions have established older views more definitely, whereas some have led to entirely new conceptions of the cause of diabetes mellitus and the action of the antidiabetic hormone.

Thus, pancreatectomy in the dog is followed by glycosuria and ketonuria; the cat similarly treated shows these signs to an even greater extent, while in certain other animal species investigated recently (pig, monkey and goat) these symptoms are much milder. Depancreatized monkeys and goats and certain depancreatized birds have been maintained alive for long periods without administration of insulin. Again, it is now well known that hypophysectomy in the depancreatized dog or cat causes an appreciable reduction in the metabolic rate of these animals, accompanied by a considerable decrease in the intensity of diabetes. It is probable that the mildness of the disease in the aforementioned species may be attributable to the lesser activity of their pituitary glands. Extracts of the anterior lobe of the pituitary gland injected into dogs and cats often produce severe, permanent diabetes.³ So far there has been no clearcut indication that diabetes mellitus is due to overactivity of the pituitary gland, but the more frequent incidence of this disease among acromegalic persons constitutes circumstantial evidence in favor of this view.

From the Department of Physiology, University of Toronto.
1. von Mering, J., and Minkowski, O.: Diabetes mellitus nach Pankreasextirpation, Arch. f. exper. Path. u. Pharmacol. 26:371, 1879.
2. Banting, F. G., and Best, C. H.: The Internal Secretion of the Pancreas, J. Lab. & Clin. Med. 7:251 (Feb.) 1922.
3. Young, F. G.: The Pituitary Gland and Carbohydrate Metabolism, Endocrinology 26:345 (Feb.) 1940.

The diabetic state, therefore, may not be due primarily to subnormal secretion of antidiabetic hormone but to various other hormonal disturbances, especially of the pituitary and the adrenals.

If the pancreas is removed from a dog, the animal is unlikely to survive for two weeks, even with the greatest care, unless insulin is administered. With this hormone a rapid recovery from the operation is obtained and, provided the diet is satisfactory (see later comment on this), the animal soon appears to be normal and may be maintained so for several years. If insulin is withheld, however, certain characteristic symptoms soon become evident. The concentration of sugar in the blood increases progressively, even in the fasting animal, until it may be several times that of the normal value of 0.07 to 0.10 Gm. per hundred cubic centimeters. Consequently, dextrose may now be detected readily in the urine, often in considerable amounts. The qualitative test for sugar in the urine as ordinarily carried out with Benedict's reagent is often positive owing to the presence of "non-sugar reducing substances." To be sure that sugar is present, one of the several methods of estimating "true sugar" should be employed. Soon, too, "acetone bodies" may be detected, and these substances gradually increase in amount. The amount of nitrogenous substances in the urine increases. These changes depend on a number of factors, including the nature and quantity of the diet.

Two criteria which have been much in evidence in the metabolic study of the diabetic condition, and since the discovery of insulin, in the study of its action, are the D:N (i. e., dextrose:nitrogen) ratio and the R. Q. (respiratory quotient). The dextrose:nitrogen ratio characteristic of the completely depancreatized animal (i. e., depancreatized dog) receiving no food or insulin was considered to be 2.8:1. There is little reason in continuing to accept this fixed value for the ratio, for it varies considerably in different animals and in the same animal at different times. With respect to the respiratory quotient, it is conceded that in the patient with severe diabetes and in the depancreatized dog or cat it has a low value of about 0.7, while after the injection of insulin it may be appreciably raised. It provides a useful index for comparing or contrasting the state of animals under similar or different conditions. But the exact interpretation of the figures is generally appreciated to be uncertain, for they are composite figures, due to metabolic changes whose type and extent investigators have no way at present of determining accurately.

Much of present knowledge of the part played by insulin has been obtained from studies of the blood sugar and of quantitative variations in its concentration. It is therefore of prime importance to appreciate what is known about this essential metabolite. The concentration of sugar (dextrose) in the blood is dependent on the rate at which it is being added to the blood and the rate at which it is being removed. This perfectly obvious view has often been overlooked, more particularly by those who have made unwarranted interpretations of dextrose tolerance curves. In the postabsorptive state the sole source of the blood sugar is the liver. The sugar is obtained by hydrolysis (glycogenolysis) of the hepatic glycogen, which may be synthesized (glycogenesis) from ingested sugar, which usually is dextrose but which may also be fructose, usually from cane sugar, or

galactose, from milk sugar. It was formerly believed that these enzymic changes which one may write glycogen \rightleftharpoons dextrose were mediated by an amylase. For long the close relationship between phosphate metabolism and carbohydrate metabolism has been recognized. As a result of recent work by Cori⁴ and others, it now appears that the aforementioned reactions involve enzymes concerned with phosphorylation processes. The glycogen is also synthesized from dextrose derived (glyconeogenesis) from certain of the amino acids (the so-called glycogenic amino acids, aminoacetic acid, alanine, cystine, proline, hydroxyproline, norleucine, serine, arginine and aspartic, glutamic and betahydroxyglutamic acids). Theoretically, dextrose might also be derived from fatty acids, but a satisfactory proof of hepatic conversion of fatty acids, except perhaps butyric acid, to sugar has not yet been given. One may regard all the extrahepatic tissues, especially the muscles and the brain, as withdrawing sugar from the blood continually. In the fasting animal at rest the liver is continuously secreting dextrose at a constant rate (studies on hepatectomized dogs indicate that in this species the rate of secretion is about 0.25 Gm. per kilogram of body weight per hour). Any extra activity of the animal calls forth an increased supply of sugar from the liver. If in spite of the increased secretion the rate of uptake increases more rapidly, hypoglycemia will result. This state may be observed in long distance runners or others engaged in prolonged physical exertion. When carbohydrate food is eaten, and the sugar is being absorbed from the intestine into the blood stream, the liver ceases to secrete sugar, the intestinal supply satisfies the energy demands of the tissues, while the excess of sugar is deposited as glycogen in the muscles as well as in the liver. The hepatic supply of glycogen is thus replenished, and when most of the sugar has been absorbed from the intestine and the blood sugar has returned to its normal value, the liver once again supplies sugar to the blood at a rate proportional, within limits, to the immediate necessities of the animal. Recently, strong support for this homeostatic mechanism of the liver has come from the researches of Soskin and co-workers.⁵ In the diabetic state the amount of glycogen retained in the liver (and muscles) even immediately after a meal is small, but the secretion of sugar by the liver continues to be greater than usual, for the rate of glyconeogenesis is increased above the normal. This is reflected in the increased nitrogen excretion and also in the rapid loss of weight of the animal. In the diabetic condition the metabolic rate is raised.

Much debate has been made as to whether the diabetic condition is characterized by an overproduction or by an underutilization of sugar. There is now no doubt that the completely diabetic patient is able to oxidize dextrose, and because of the increased concentration of sugar in the tissues, the amount of dextrose oxidized may not be much short of that which the animal would use under normal conditions, with a normal concentration of blood sugar. There is also no doubt that an appreciable overproduction of sugar by the liver occurs. We take the position that both overproduction and underutilization play a role in the diabetic state.

4. Cori, C. T.: Glycogen Breakdown and Synthesis in Animal Tissues, *Endocrinology* 26: 285 (Feb.) 1940.

5. Soskin, Samuel: The Liver and Carbohydrate Metabolism, *Endocrinology* 26: 297 (Feb.) 1940.

The disturbed metabolism of fat in the depancreatized animal is indicated by an increase of fatty substances in the blood: neutral fat, cholesterol esters and phospholipids. Presumably, these reflect an increased rate of mobilization of depot fat. The extent of these changes is dependent on the presence or absence of certain dietary factors (see later comments on this). Further evidence of the disturbance in fat metabolism is the development of ketosis.

Ketosis is a well recognized condition in the diabetic patient and in depancreatized animals of certain species. The condition is manifested by the presence in the blood and urine of abnormal amounts of "acetone bodies" (acetone, acetoacetic acid and beta-hydroxybutyric acid). Methods are available for the estimation of each of these constituents or for the combined estimation of all three (and this is the information usually sought). Although the amounts of these substances normally present in the blood are very small—so small as to be just detectable by sensitive methods—it seems justifiable to regard them as normal metabolites. They are produced in the liver. They may be formed from certain of the amino acids (the "ketolytic" amino acids, tyrosine, leucine, isoleucine and phenylalanine) and from fatty acids. We know that these "acetone bodies" are formed in greater amounts at times when there is reason to believe that oxidation of fat is providing much of the body's energy requirements. It was generally taught that their production at such times is due to the absence of oxidation of carbohydrate. Carbohydrates were thus regarded as antiketogenic substances, but there is now much to commend the teaching that carbohydrates are antiketolytic; that in the absence of carbohydrate, if fat is available, more fat is used, with a consequent increase in the production of "acetone bodies."

The ketosis in a depancreatized fat dog is greater than that in a lean one, but this species is characterized by its efficiency in metabolizing fats without ketosis. The loss of body fat is rapid, but the ketosis may be so severe even in this species that severe acidosis develops and the dog dies in coma before the fat reserves are depleted. The toxic enolic form of acetoacetic acid, $\text{CH}_3\text{COH}=\text{CH}\cdot\text{COOH}$ (and other substances containing the enolic grouping $\text{C}\cdot\text{OH}=\text{CH}$ are said to act likewise), is reported to stimulate the respiratory center and to depress the higher centers of the brain, so causing "air hunger" and the dimmed perception and loss of consciousness of diabetic coma. But the evidence does not justify the conclusion that acetoacetic acid is the sole cause of this syndrome.

CHEMISTRY OF INSULIN

The active material is a protein. It may be regarded as an albumin. By the Svedberg ultracentrifuge method it has a molecular weight similar to that of egg albumin, namely, 35,000. It now can be readily crystallized,⁶ usually in the form of twin rhombohedra of microscopic size, a little above its isoelectric point, provided salts of zinc, nickel, cadmium or cobalt are present in the solution. These metals are evidently linked chemically with the protein in its crystalline state, for they occur in constant amounts and these amounts are proportional to their atomic weights. Zinc is present in zinc insulin crystals to the extent of nearly 0.5 per cent.

The fact that normal pancreatic tissue is relatively rich in zinc may be of some significance in the storage of the hormone in the gland. The protein has a high sulfur content (3.2 per cent), all present in the form of cystine. The molecule contains no carbohydrate material, and apart from its low mineral content, appears to be wholly constituted of amino acids. The constituent amino acids and their percental distribution have been reported as leucine 30, glutamic acid 21, cystine 12, tyrosine 12, proline 10, histidine 4, arginine 3, lysine 2, phenylalanine 1. The figures should perhaps be regarded as indicating the relative amounts rather than the exact amounts of the different amino acids.

Slightly acidified insulin has been kept for long periods, but in dilute alkali insulin is relatively unstable. It is hydrolyzed and so is rendered physiologically inactive by those enzymic preparations which attack proteins. Thus, trypsinogen is without effect on insulin, and a portion of pancreas may be incubated at 37 C. for some hours without any alteration in the amount of insulin which can be extracted from it. Various attempts have been made to ascertain if there is in the molecule a specific grouping of certain of the amino acids which is really responsible for its hormonal activity. It may be concluded that the physiologic activity of insulin may be slightly and sometimes reversibly decreased by certain minor chemical changes in the molecule, whereas appreciable chemical alteration gives a considerable diminution or complete absence of activity. These considerations are linked with the fate of insulin in the animal body after secretion from the pancreas or after parenteral injection. Proteases of the blood and other tissues may effect considerable destruction. Other changes have been suggested, such as the action of sulfhydryl groupings, as in glutathione, which may reduce the cystine disulfide linkage, a change which is known to be accompanied by inactivation.

INSULIN STANDARD

Zinc insulin crystals from all sources so far examined (man, cattle, hog, sheep, bison, fish) have the same potency. Very recently, preparations of zinc insulin crystals have been made of slightly greater potency than usual. This work may have considerable theoretic interest. The international standard, a preparation of zinc insulin crystals, is defined as containing 22 units per milligram. There are two well established methods of assaying the potency of an insulin preparation. The lowering of blood sugar in fasting rabbits and the production of convulsions in fasting mice furnish satisfactory effects of insulin for the comparison of unknown and standard products.

SOURCE OF INSULIN

The pancreas appears to be the only organ which makes and stores the antidiabetic hormone in detectable amounts. The hormone has also been demonstrated in blood, but this has been done, not by extraction procedures, but by passing the blood into another test animal.

The islet cells of the pancreas are of three types: α , β and a more ill defined type called D cells by Bloom. In dog pancreas the number of cells per islet varies greatly, as do the relative numbers of the three types of cells. One study gives the average number per islet as 30 and the average ratio of α , β and D cells as

⁶ SALT, D. A.: Crystalline Insulin, *Endocrinology* 25:437 (Sept.) 1935.

20:75:5. The islet volume may be about one one-hundredth of the pancreas. The β cells occupy the periphery of the islets and are smaller than the others. It is these cells which are considered to be producers of the antidiabetic hormone; indeed, the granules of these cells may consist largely of this substance. Epithelial cells of the small ducts are considered to be the "mother cells" of the islet and acinar cells. New islet cells may therefore be produced from them. It may be mentioned here that in no frank uncomplicated case of diabetes mellitus has there appeared to be complete recovery of islet function. Although earlier claims of the demonstration of a pancreatropic principle in the pituitary have been questioned, recent research indicates the presence in anterior lobe extracts of a pancreatic stimulant. Thus the pancreases of dogs receiving these extracts show at certain times not only degenerative changes in islet cells but also obvious proliferation of new islet tissue. Certain strains of rats similarly treated show no degenerative changes but a definite increase in islet cells.

The main points of evidence which indicate that the hormone is produced in the islet cells are as follows: 1. Histologically, the islets are glandular structures, the obvious outlet for the secretion of which is through the blood stream. 2. There are relatively large amounts of the hormone in the principal islets of teleostean fishes, in which few enzyme-producing cells are found. 3. The active substance is found in degenerated pancreas in which the loss of acinous tissue has proceeded more rapidly than that of the islet cells. Ligation of the pancreatic ducts eventually produces a decrease in the insulin content of the pancreas, but moderate amounts of insulin may still be extracted when very few enzyme-producing cells remain. 4. When most of the pancreas, approximately nine tenths, is removed from a dog, characteristic lesions (hydropic degeneration) are found in the β cells of the remnant. These changes can be accelerated by a high carbohydrate diet, and prevented or eliminated by administration of insulin or by fasting. 5. The clinical condition known as hyperinsulinism occurs when the pancreas liberates abnormally large amounts of antidiabetic hormone. In many of the cases there are definite tumors of the islet cells. After operative removal of these masses of islet cells the blood sugar is maintained at higher levels. 6. Metastases in other tissues arising from carcinoma of the islet cells have been shown to contain insulin. 7. The injection of anterior pituitary extracts leads to destructive changes in the islet cells, chiefly in the β cells, while there is little or no effect on the α cells. The pancreases from a number of dogs treated with these extracts have been assayed for their insulin content, and the values obtained were roughly proportional to the β cell concentration in histologic sections of these glands.

THE INSULIN CONTENT OF THE PANCREAS UNDER DIFFERENT CONDITIONS

The insulin content of the pancreas under widely different conditions and in various animal species has been extensively studied. The insulin is obtained from minced pancreases with an acid aqueous alcohol solution, from which certain contaminating material is removed before precipitating the active material, which is then redissolved and estimated by the mouse method of assay. In the dog, the insulin content of the free splenic end of the pancreas is greatest, that of the

attached duodenal portion has an intermediate value, while that of the free duodenal end is lowest, the values being about 4, 3 and 2 units per gram, respectively. It might be mentioned here that the size of the pancreas in the dog, at least, bears no strict relationship to the weight of the animal. In partially depancreatized dogs, provided sufficient pancreas is left to prevent the onset of diabetes, the insulin content does not differ from that of the corresponding part in a normal dog, nor are any degenerative changes in the β cells noted, whereas, if diabetes supervenes, hydropic degeneration of these cells is observed, and the insulin content of the remnant of pancreas becomes extremely small. The daily injection into dogs of diabetogenic extracts from the anterior lobe of the pituitary gland produces a prompt and profound decrease in the insulin content of the pancreas (in seven days to 0.2 unit per gram). If administration of the extract is discontinued at this stage, the normal insulin content is restored within four days, whereas continued administration of extract reduces the insulin content to negligible amounts, and no subsequent recovery occurs. Simultaneous administration of insulin prevents or greatly modifies the fall in the insulin stores. The latter fact strongly suggests that the β cells are permanently damaged by the extract through overwork and that the simultaneous administration of insulin relieves the cells of some of this excessive demand for the hormone.

The injection of anterior pituitary extracts into certain strains of rats does not cause a diabetic condition. Instead the insulin content is increased, as is also the islet count. Starvation (seven days) or a diet rich in fat produces a decrease in the insulin content of the rat pancreas to about half its normal value, which is about $2\frac{1}{2}$ units per rat. These animals have their insulin stores speedily restored to normal (in six days) when they are returned to a balanced diet; carbohydrate alone effects a partial restoration. Daily injection of insulin into rats causes an even more marked decrease in the insulin content of the pancreas than does starvation. In this connection it is interesting to note the earlier report that injection of insulin inhibited the proliferative activity of the islet cells of young rats. Also feeding of a high fat diet to trout is said to lead to degenerative changes in the islets. No marked histologic changes were noted in the islets of the rats on the high fat diet.

The effect of age on the insulin content of the pancreas has been studied in the cow. In fetal calves under 5 months the pancreatic content was 34 units per gram; in calves 6 to 8 weeks old, 10 units per gram; in heifers 2 years old, 5 units per gram; in cows 9 years old and older, 2 units per gram. Pregnant cows 7 years old and older showed no change from the normal insulin content of 2 units per gram. Here it may be mentioned that the decrease in insulin requirements frequently noted at certain stages of pregnancy in the diabetic woman has not been clearly shown to be due to the passage of antidiabetic hormone from the fetus to the mother. What seems likely is that extra sugar may pass from the mother to the fetus as a result of excessive stimulation of the fetal pancreas. The changes may also be due directly to the considerable hormonal activity of pregnancy.

Pancreases obtained from nondiabetic persons post mortem have an average insulin content of about 2 units per gram; those of diabetic persons show wide varia-

tion, the average content being 0.4 units per gram. The insulin content of a tumor of islet tissue surgically removed from a patient suffering from hyperinsulinism was as high as 85 units per gram.

It is, of course, apparent that these "insulin contents" indicate the balance between the rate of production of the hormone in the islets and the rate of liberation. There is no reason to doubt that under different conditions these rates may vary considerably and in either direction. The tentative conclusion has been drawn from some of these results that the islet cells are "rested" by administration of insulin, by starvation and by a high fat diet; that in these conditions less insulin is excreted by the pancreas than under normal conditions.⁷ Partial pancreatectomy, sufficiently extensive to result in diabetes, and administration of diabetogenic extracts cause marked stimulation of the islets and, because of this "overwork," they degenerate.

SECRETION OF INSULIN

Nerve endings of the vagus have been located in the β cells of the islets. There is reason to believe that the nervous control plays a minor role in secretion, and certainly secretion of insulin has been demonstrated in denervated pancreatic transplants. It is generally believed that the rate of secretion of the antidiabetic hormone is regulated by the concentration of dextrose in the blood passing through the pancreas. Other substances may play a part in this regulation, possibly the antidiabetic hormone itself; at certain concentrations in the blood it may inhibit further secretion by the β cells. Houssay⁸ obtained a lowering to normal of the blood sugar of a depancreatized dog by means of a pancreatic transplant; the transplantation of three more pancreases produced no further effect. When sugar is fed to an animal, the resulting hyperglycemia evokes increased secretion of insulin, which prevents the continued increase of the blood sugar and ultimately is responsible for the return of the sugar to the normal value, at which time the secretion of insulin returns to its former rate. It has been maintained that the pancreas secretes the hormone continuously at a constant rate, and that the dextrose tolerance curve is determined by a change in activity of the liver as already discussed. A more satisfactory interpretation of known facts can be made if these two views are amalgamated: the concentration of blood sugar is controlled by supply or withdrawal of sugar on the part of the liver and by changes in the rate of secretion of insulin on the part of the pancreas.

It has been claimed by a number of investigators that the duodenal mucosa possesses a hormone (incretin or duodenin) which lowers the blood sugar by its supposed stimulation of the islet cells to secrete insulin. The presence of such a hormone has been rendered extremely doubtful by the recent work of Ivy and co-workers,⁹ who further offered a critical analysis of the earlier experimental findings.

Interesting studies have been made of the insulin requirements of depancreatized dogs under different conditions. Thus the blood sugar has been kept at a normal level by simultaneous and continuous intra-

venous injection of insulin and dextrose solutions. The insulin required was between 0.06 and 0.4 units per kilogram per hour, while the corresponding requirement of dextrose was 0.2 to 0.6 Gm. per kilogram per hour. The higher values for insulin and dextrose were those required by unanesthetized dogs; the others, by anesthetized dogs. In another study the amount of insulin necessary to keep the blood sugar at a normal value in depancreatized dogs under basal conditions was between 0.005 and 0.035 unit per kilogram per hour, with an average value of 0.017 unit per kilogram per hour. The duration of action of insulin is not proportional to the size of the dose injected but is a simple function of the logarithm of the dose; i. e., insulin is inactivated in the body at a rate proportional to the amount in the body at the time. Thus if 1 unit lasts four hours, 10 units would last eight hours.

ADMINISTRATION OF INSULIN

Overdosage of insulin or spontaneous secretion of the hormone in excessive amounts is followed by a series of subjective sensations which have been frequently described. Objective signs are also evident in man and in animals, becoming progressively more alarming and finally giving way to convulsions or coma. This train of symptoms runs parallel to the progressive decrease in the concentration of the blood sugar. With certain species, e. g., dogs and rabbits, the convulsions may be severe and prolonged before coma ensues, while with other species, e. g., man and rats, the convulsions may be relatively mild, the comatose state quickly supervening. The physiologic mechanisms involved in these changes have yet to be elucidated; certainly the central nervous system is involved, for convulsions are annulled by general anesthesia, and they do not appear in spinal preparations. There is no good evidence to support older views that these symptoms depend on an accumulation of certain substances, toxic or otherwise. At present it may be said that these symptoms are associated with, and induced by, the low concentration of dextrose. It may be mentioned that under most circumstances the extreme condition of convulsions or coma does not occur until the concentration of blood sugar is extremely low or even zero. It will be remembered that many of the methods used to estimate blood sugar are not specific, and the values obtained are too high owing to the presence of "non-sugar reducing substances." In the diabetic patient and the depancreatized animal the convulsive level of the blood dextrose is frequently much higher than in the normal subject. But the onset of convulsions, with respect to the concentration of blood dextrose, depends on a number of factors. If the blood sugar is lowered rapidly, the convulsive symptoms may appear at a somewhat higher concentration of dextrose, while a very gradual lowering may be made to what ordinarily would be the convulsive level without convulsions or coma. If the patient or animal remains in this state for some time and convulsions finally occur (and they may be precipitated by relatively slight stimuli, such as a noise or a touch), they are often very severe, and restoration by administration of dextrose is much slower than when convulsions result from a speedy lowering of the blood sugar. This fact is of some consequence in the treatment of diabetic patients with protamine zinc insulin. It has been reported that rats are much more sensitive to insulin (as judged by the speedy production of

7. Hart, R. E.; Campbell, J., and Best, C. H.: The Prevention of Diabetes, New England J. Med. 223: 607 (Oct.) 1940.

8. Houssay, B. A.: Diabetes as a Disturbance of Endocrine Regulation, Am. J. M. Sc. 193: 581 (May) 1937.

9. Loew, E. R.; Gray, J. S., and Ivy, A. C.: The Effect of Duodenal Instillation of Hydrochloric Acid upon the Fasting Blood Sugar of Dogs, Am. J. Physiol. 126: 270 (June) 1939.

severity of the hypoglycemic reactions) under reduced barometric pressure (460 mm. of mercury) than under normal pressures.

The term "hyperinsulinism" should be reserved for those cases in which there is excessive secretion of insulin, usually the result of a tumor of the islet cells, though in some instances it is due possibly to general hyperplasia of the islet tissue. It is by no means easy to prove that a given condition is one of hyperinsulinism. Even alleviation of the condition by surgical removal of a large part of the pancreas does not necessarily prove the point. The same result would have been secured if the hypoglycemia had been due, for example, to diminished secretion of the anterior lobe of the pituitary, for it has been shown that the hypoglycemia produced experimentally by extirpation of the anterior lobe of the pituitary may be alleviated by complete removal of the normal pancreas.

Very large doses of insulin can be given without apparent damage to animals of different species, provided they eat to the capacity of a normal hungry animal, otherwise frequent parenteral injection of small doses of dextrose are necessary and sufficient.¹⁰ There appears, however, to be a limit to the tolerance for insulin even when hypoglycemia is prevented, but for most persons this is extremely high. Some have withstood the injection of very large doses, up to 1,000 or more units of insulin. In the treatment of schizophrenia the use of insulin in sufficient amounts to produce coma appears to depend on the prolonged marked hypoglycemia, which results in a curtailment of the energy supply of the brain. The use of insulin in other nondiabetic persons (those with tuberculosis, digestive disorders or malnutrition) depends on its stimulation of the appetite. Many persons seriously underweight before treatment have been brought relatively quickly to their normal weights. The increase in gastric motility and secretion following the administration of insulin was considered to be wholly due to the induced hypoglycemia, but there is now reason to believe that this is only part of the mechanism, for these effects of insulin are abolished by vagotomy. It has been well established that the administration of insulin to nondiabetic persons is followed for some time by a lowered tolerance for dextrose. This is probably due to suppression of the secretion of insulin by the subject's pancreas.

MODE OF ADMINISTRATION

A considerable advance in insulin therapy was made by the combination of insulin with protamine. The method was further perfected by the discovery that the addition of a small amount of zinc salt not only prolonged the effectiveness of the insulin but also stabilized what was otherwise a troublesome mixture to administer. Whereas solutions of zinc insulin crystals are rapidly absorbed from the subcutaneous tissues, preparations of protamine zinc insulin, having but slight solubility in the tissue fluids, are absorbed from the site of injection much more slowly, thereby simulating more closely the secretion of the normal pancreas. The following substances among others have also been added to insulin, and a delayed action of the hormone noted: zinc salts, spermine, arginine, thymus extract, alum, globin and hexamethylenetetramine.

Studies continue to be made on the problem of the administration of insulin other than by parenteral injection. In the main, efforts have been made to combine insulin with various materials, dyes, phenolic substances, tannic acid and others, which will protect the protein molecule from destruction by the intestinal enzymes when the hormone is given by mouth. The difficulties involved are obvious, and it is therefore not surprising that, while some success has attended these efforts in the laboratory, no satisfactory application to the treatment of diabetic patients has yet been made.

ALLERGY

Mild local reactions at the site of injection of insulin are not uncommon, while several local reactions and even generalized anaphylactic reactions have been reported occasionally. With the progressive purification of insulin preparations, allergic reactions have become much less frequent. Often the use of insulin from another animal source (insulin is available from cow, pig and sheep) eliminates or greatly modifies the reactions, though occasionally even preparations of zinc insulin crystals from a different source are not without local effect. Troublesome local reactions are said to have been observed with protamine zinc insulin in patients unaffected by the commercial brands of unmodified insulin. It might be mentioned that protamine is regarded as one of the nonantigenic proteins.

Recently claims have been made of successful active sensitization of guinea pigs with insulin. Zinc insulin crystals were used in some of these studies.¹¹ These findings raise a number of interesting points which may lead to results of fundamental importance. It has been supposed that hormones are identical in different species. Of the possible explanations of the apparent antigenicity of insulin preparations, the most obvious, perhaps, is that in spite of crystallization there may be present a minute amount of contaminating material which is actually responsible for the sensitivity reactions, or that in the process of isolation insulin has been altered in some way so as to render it a "foreign protein," unless one accepts the view that insulins from different biologic sources have certain differences in chemical structure, revealed by the delicate test of anaphylaxis.

THE MODE OF ACTION OF INSULIN

Of recent years several investigations have been published demonstrating *in vitro* actions of insulin in various minced or sliced animal tissues or cell-free extracts of them. Various interpretations have been placed on some of the findings.

Some have supposed, though on no very secure basis, that the carbohydrate substance which is oxidized in the animal body is glycogen rather than dextrose. Certainly insulin is concerned with the supply of glycogen, for, as already mentioned, in the depancreatized animal there is marked depletion of glycogen in the muscles (except the cardiac muscle, which shows an increase over the normal) and especially in the liver. A certain limited synthesis of glycogen in the liver and muscles has been shown in depancreatized dogs deprived of insulin for a few days. But, for a restoration to normal values, insulin is necessary. It has been debated whether insulin stimulates glycogenesis or inhibits glyco-

10. Allen, F. M.: Diabetic Experiments, *Tr. A. Am. Physicians* 53: 320, 1938.

11. Harten, M., and Walzer, M.: Allergy to Insulin, Liver, Pituitary, Pancreas, Estrogens, Enzymes and Similar Substances, *J. Allergy* 12: 72 (Nov.) 1940.

genolysis. It may well be that insulin exerts both of these effects under different conditions. When insulin is injected into a normal animal, there is a decrease in the concentration of blood sugar. Presumably some of the sugar which is removed is converted to muscle glycogen. The synthesis of muscle glycogen is easily demonstrated if sugar is also given. While insulin increases the deposition of hepatic glycogen in the diabetic animal, when it is given to a normal animal receiving sugar at the same time, the amount of glycogen stored in the liver is less, and may be considerably less, than when sugar is given without insulin. This well established fact should be borne in mind when for any reason it is necessary to build up rapidly the hepatic glycogen stores in the nondiabetic subject. There is no reason to doubt that considerable amounts of sugar (either as dextrose or as glycogen) are oxidized in the body in the absence of insulin. Insulin in conjunction with other substances appears to fulfil the role of arbitrator as to the relative amounts of the different sources of energy—carbohydrate, fat and protein—which shall be oxidized, and also as to the extent of the interconversion of these materials. If one were obliged to name the organ in which insulin exerts the most potent influence, there would be little hesitation in selecting the liver. In this connection the anatomic position of the liver with respect to the pancreas may be of considerable significance. It is true that so far no one has been able to demonstrate any difference in effect when insulin is injected into the portal system and when it is injected elsewhere in the body, but the relatively big doses used in comparison with the slow secretion of insulin by the pancreas may have masked the effect of the normal distribution of insulin. It is suggested, then, that the liver in the normal animal obtains a disproportionately large share of the secreted insulin. Not only do many chemical changes take place in the liver, but the extent of some of these changes is very great, which is more fully appreciated when one recalls that the liver alone is said to account for about one third of the total metabolic rate of the body. When the insulin supply is deficient, the rate of glyconeogenesis in the liver is increased. Administration of insulin decreases the production of sugar from amino acids, presumably by its effect on the deamination system. As has been already indicated, the production of sugar from fat is still hotly debated. Insulin exerts its effect also on other tissues. Thus the normal usage of sugar by the muscle is dependent on the correct supply of insulin. Mirsky has suggested that insulin has another effect on muscle metabolism in that it appears to increase the rate of the utilization of amino acids by the muscles for the synthesis of proteins.

The injection of insulin into a diabetic animal decreases the lipemia and cholesteremia. It would be unwarranted to presume that therefore insulin directly controls the mobilization of lipids and cholesterol. Again, an injection of insulin into a normal or a diabetic animal is followed by changes in the concentration of various other blood constituents. Perhaps the best known changes are the decreases in the inorganic phosphate and different nitrogenous substances, such as amino acids, urea, creatine and creatinine. In part these changes are regarded as secondary to hypoglycemia and due to the consequent liberation of epinephrine. This is so, but insulin itself can bring about these

changes. Various changes in the concentration of the metallic constituents of the blood have been reported. It would appear that some of these changes, especially that of the concentration of potassium, point to a fundamental relationship between electrolytes and carbohydrate metabolism.¹²

To summarize this discussion on the action of insulin it may be stated that the hormone (1) decreases glyconeogenesis from protein, (2) encourages the formation of glycogen, (3) increases the combustion of carbohydrate, (4) decreases the insulin content of the pancreas in the fed or the fasting animal and (5) protects the islet cells, probably by preventing overstrain.

INSULIN RESISTANCE AND SENSITIVITY

These terms are used to describe vastly different conditions. Thus the term "insulin resistant" is applied to the so-called adult type of diabetes, as opposed to the juvenile type of diabetes referred to as "insulin sensitive." It is also applied to the alteration in the diabetic state due to infection or to diabetic coma. It is obvious that the terms bear no rigid connotation. Again, the administration of thyroxin is said to increase "insulin resistance." This is only partially true, for continued administration of thyroxin until the hepatic stores of glycogen become very meager brings on a state of "insulin sensitivity." In comparing the effect of insulin under different conditions—even in the same animal—different results may be obtained, depending on the particular criterion employed in the comparison. A dog that has been starved for a long time will deposit much less hepatic glycogen after an injection of dextrose and insulin than a dog that has fasted for a short period. One might therefore conclude that the animal is insulin resistant in its starved condition. However, if the change in blood sugar is used as the criterion, this is not necessarily the conclusion. Chambers has shown that while the absolute decrease in the concentration of blood sugar due to the injection of insulin is less in the starved than in the normal condition, the percental decrease based on the initial concentration during fasting is the same. The following tabulation lists the conditions and substances which are considered to influence the response to insulin and should be liberally interpreted in the light of the aforementioned qualifications.

Resistance to Insulin	Sensitivity to Insulin
Diet	Diet (e. g., addition of vitamin B ₁ , addition of sodium chloride)
Infections	von Gierke's disease
Allergic reactions	Sympathectomy
Coma accompanied by acidosis	Hypothalamic lesions (occasionally)
Hyperthyroidism (thyrotoxicosis)	Hypopituitarism (hypophysectomy)
Hyperpituitarism (acromegaly)	Adrenal insufficiency
Glycotropic principle of anterior pituitary extracts	Adrenal denervation
Diabetogenic principle of anterior pituitary extracts	
Posterior pituitary extracts	
Epinephrine	
Steroids of the adrenal cortex	

INSULIN SUBSTITUTES

Much experimental work continues to be done in efforts to obtain a substitute for insulin, preferably one which will be active when given by mouth. Numerous

¹² Fenn, W. O.: *The Role of Potassium in Physiological Processes*, *Physiol. Rev.* 20: 377 (July) 1940.

plant extracts have been tried, and with some a lowering of the blood sugar has been noted. Several derivatives of guanidine have also been tried, perhaps the best known being decamethylene diguanidine. This substance does not increase deposition of muscle glycogen and its effect on hepatic glyconeogenesis is accomplished in a highly unphysiologic manner—by damaging the liver. Other substances besides this substance interfere with sugar formation in this manner. It is preferable for the diabetic organism to excrete the large quantities of dextrose made by a relatively healthy liver than to be made "sugar free" by damaging the liver so that less dextrose is formed.

THE QUESTION OF A SECOND INTERNAL SECRETION OF THE PANCREAS

It has been claimed by various research workers that there is evidence for the production of an internal secretion by the α cells of the islands of Langerhans. Extracts purported to consist largely of substances obtained from the α cells are believed to exert an effect on fat metabolism. These results raise an interesting point but cannot at present be regarded as convincing.

Dragstedt and collaborators have published in a series of articles results which they believe demonstrate the existence of a new pancreatic hormone which they have named lipocaic. This substance prevents deposition of fat in the livers of depancreatized dogs under certain conditions. They have shown that the active substance of this extract is not choline, which had been previously proved, by the Toronto group, to exert similar effects. Some investigators have secured evidence which supports Dragstedt's conclusions, and others have challenged his interpretations.¹³

New light has been thrown on this problem by our colleagues McHenry and Gavin, who have obtained definite evidence that the pancreatic extract lipocaic and other materials, such as rice polish concentrate and yeast, do contain a dietary factor which is quite distinct from choline. This active material prevents the fatty change of the liver produced in rats by certain liver extracts (Blatherwick and co-workers) under conditions in which choline is ineffective.

The situation with regard to the pancreas at present is, therefore, that it has been shown to contain a dietary factor or factors other than choline and that the one of these which affects liver fat in rats is present also in rice polishings and yeast. This unidentified dietary factor may or may not prove to be identical with the pancreatic factor other than choline which affects liver fat in depancreatized dogs. Until these points are settled the active substance in lipocaic cannot be accepted as an internal secretion of the pancreas.

13. Best, C. H., and Ridout, J. H.: Choline as a Dietary Factor, in Luck, J. M., and Smith, J. H. C.: *Annual Review of Biochemistry*, Stanford University, Calif., Stanford University Press, 1939, vol. 8, p. 349.

The Laughing Philosopher.—Democritus (470, 460?–420 B. C.) was called the Laughing Philosopher and was a manic-depressive of considerable ability. While his contributions to psychiatry were not numerous, he was the first to construct a quantitative theory of atoms as a basal structure of matter. His system of philosophy is known as the "atomic" system. Democritus is said to have been cured of melancholia by Hippocrates but, nevertheless, he later committed suicide.—Lewis, Nolan D. C.: *A Short History of Psychiatric Achievement*, New York, W. W. Norton & Co., Inc., 1941.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary.

GENERAL AUTOMATIC MODEL D-90 SHORT WAVE UNIT ACCEPTABLE

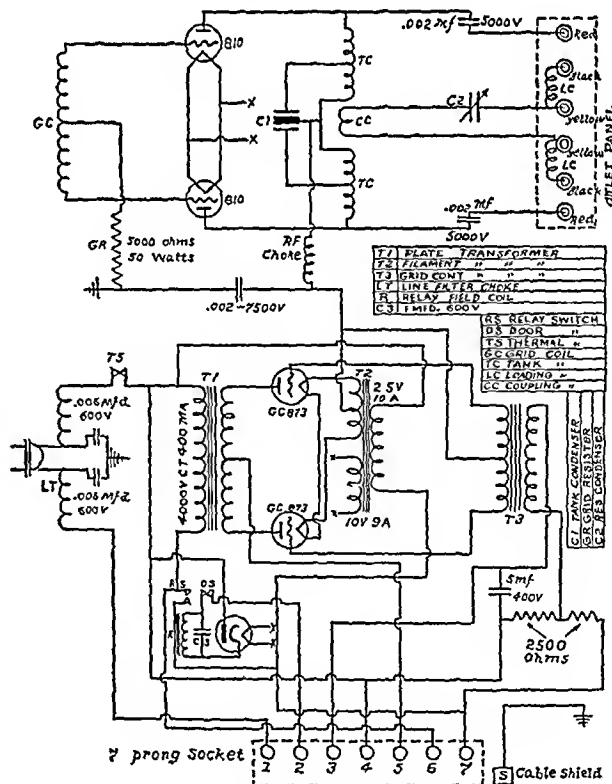
Manufacturer: General Automatic Corporation, Macedonia, Ohio.

The General Automatic Model D-90 Short Wave Unit is designed for use in medical and surgical diathermy. The unit may be used with cuff or air spaced electrodes, induction cable and surgical electrodes. The steel cabinet in which the apparatus is mounted is 24 inches wide, 14½ inches deep, 42 inches high in the front and 48 inches high in the rear; the apparatus weighs 125 pounds. The firm claims that the cabinet incorporates scientifically designed ventilation, and intake ports on the bottom and outlet grills at the top rear provide a "chimney" effect.



General Automatic Model D-90 Short Wave Unit.

Of the four tubes used in the unit, two are HF-175 high frequency oscillators and two are GC-873 grid control mercury vapor rectifiers. A fifth tube (standard radio type, 12 by 3) is used as a relay rectifier in the automatic time delay circuit. The circuit is of the conventional tune plated, tuned grid type.



Evidence to substantiate claims made for heating tissues was submitted by the firm in the form of data of deep tissue heating measurements. The data are as follows:

Application: *Air Spaced Electrodes*—Average of 6 tests.
Technic: Two 5½ circular disks. Average distance 7 inch centers, and equally distant from the thigh cannula. Plate current 150 milliamperes. Dielectric—Air.

	Initial	Final
Deep Muscle Temperature	98.6 F.	107.3 F.
Oral Temperature	98.6 F.	98.7 F.

Application: *Double Cuffs*, Average of 6 tests.
Technic: Two cuffs 2¾ by 18¾ inches. Distance 6½ to 7 inch centers placed equidistant from thigh cannula. Three-fourths inch felt spacing plus one hand towel. Plate current 75-100 milliamperes.

	Initial	Final
Deep Muscle Temperature	98.6 F.	105.3 F.
Oral Temperature	98.7 F.	98.7 F.

Application: *Inductance Cable*, Average of 6 tests.
Technic: Four turns of cable around the thigh; two turns above and two turns below the cannula equally spaced. Three-fourths inch felt spacing and one layer of hand towel between skin and cable. 7 inches overall from upper to lower turns. Plate current, 125 milliamperes.

	Initial	Final
Deep Muscle Temperature	98.6 F.	108.2 F.
Oral Temperature	98.9 F.	99.5 F.

The Council test to determine the frequency drift indicated that it was somewhat more than 0.5 per cent.

The Council voted to accept the General Automatic D-90 for inclusion on its list of accepted devices.

BRITESUN INFRA-RED LAMPS MODELS A-4, A-52, A-537 ACCEPTABLE

Manufacturer: Vogel-Peterson Company, Inc., 1801 North Wolcott Avenue, Chicago.

The Britesun Infra-Red Lamps, Models A-4, A-52 and A-537, produce infra-red radiation for therapeutic purposes.

Model A-4 lamp is mounted on a stand adjustable vertically from 22 to 80 inches which has a 15½ inch heavy base described as "nontipable" and a chromium plated extension and adjustable arm. A 750 watt generator is mounted in a bowl shaped reflector.

Model A-52 lamp is mounted on a stand adjustable vertically from 28 to 72 inches and which has a heavy 11 inch base and a chrome plated extension and adjustable arm. A 600 watt generator is mounted in a bowl shaped reflector.

Model A-537 lamp is said to be useful for diagnosis as well as treatment. Its stand adjusts vertically from 12 to 67 inches, horizontally, and tilts and rotates without set screws, holding any position, and is provided with a 12 inch heavy base. A 325 watt generator is mounted in an 11 inch reflector for therapeutic purposes, and for diagnostic use an ordinary bulb may be inserted.

Both burners are of the resistance type with a black metal cover over the resistance wire, which is embedded in refractive material. It requires some time for the burner to warm and generate heat, but this delay is no slower than with others of a similar design.

The Council voted to accept the Britesun Infra-Red Lamps, Models A-4, A-52 and A-537 for inclusion on its list of accepted devices.

UNITED DIATHERMY APPARATUS NOT ACCEPTABLE

Manufacturer: United Diathermy, 154 East Erie Street, Chicago.

The United Diathermy Apparatus is advertised and sold directly to the public as a means of alleviating pain occurring in diversified pathologic conditions. The following statements are taken from a recent advertisement in a Chicago newspaper:

"STOP . . . ALLEVIATE YOUR PAIN! with SHORT WAVE Diathermy. If you suffer from ARTHRITIS, Rheumatism, Sciatica, Bursitis, Lumbago, Neuralgia, Sinus Trouble, INNER HEAT FOR INNER HEALTH."

"Don't keep on suffering day after day. . . . Science has found a way to ALLEVIATE YOUR AGONIZING PAINS . . . a remedy

so simple and effective as to seem a miracle. Thousands have already discovered what SHORT WAVE diathermy can do . . . and today are leading happier lives. The great secret of short wave diathermy is INNER HEAT . . . heat that penetrates deeply . . . right into those sore and afflicted muscles, nerves, tissues and joints . . . that give you such wrenching pains. All over the world . . . in leading hospitals . . . by eminent specialists and medical authorities . . . SHORT WAVE diathermy is being used successfully. Today YOU can alleviate quickly the agonizing pains of RHEUMATISM . . . ARTHRITIS . . . LUMBAGO . . . SCIATICA . . . and other MUSCULAR ailments. Why suffer any longer? The UNITED Portable model is as simple and safe to operate as your radio . . . it is the last word in home Short Wave Diathermy . . . it is just as efficient as the equipment used in hospitals. In order to prove to you what UNITED SHORT WAVE DIATHERMY can do for YOU . . . we invite you to try it IN YOUR OWN HOME . . . at absolutely no cost to you . . . Just fill out the coupon and you can have a FREE TRIAL . . . RIGHT IN YOUR OWN HOME."

The Council has frequently pointed out that short wave apparatus is in most instances ineffective or even dangerous in the hands of an inexperienced layman and that an experienced physician or technician should operate an efficient apparatus so that it will benefit the patient. This opinion is in contradiction to the firm's opinion; namely, "The United Portable Model is as simple and safe to operate as your radio. . . . It is just as effective as the equipment used in hospitals."

Diathermy is contraindicated in some forms of arthritis; its use in the acute infectious type may result in definite harm to the patient. The acquiring of such an apparatus for use in the home may also prevent the suffering patient from seeking competent medical advice and treatment because it may give him a feeling of false security.

In actively promoting the sale of diathermy apparatus to inexperienced laymen for self treatment, the firm is, in the opinion of the Council, carrying out methods detrimental to rational therapeutics. Therefore the Council on Physical Therapy voted to declare the United Diathermy apparatus unacceptable for inclusion on its list of accepted devices.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

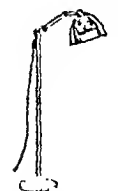
THEODORE G. KLUMPP, M.D., Secretary.

ACETYL-BETA-METHYLCHOLINE

Acetyl-beta-methylcholine is a choline derivative with sufficient stability within the body so that it may be employed in certain conditions in which the effects of parasympathetic stimulation are desirable. Its actions resemble the "parasympathetic" actions of acetylcholine with little or none of the latter's "nicotine" effect. It exerts a depressant effect at the sinoauricular node, auricular musculature and auriculoventricular node and bundle of the heart and stimulates gastrointestinal peristalsis. The bradycardia induced by the drug is blocked by quinidine, which also antagonizes its prolongation of auriculoventricular conduction. It also produces a general vasodilatation of blood vessels which are not known to be innervated by parasympathetic nerves, with a subsequent fall in blood pressure. The drug may therefore be regarded as a physiologic antagonist to epinephrine. All its effects are intensified and prolonged by phoslogamine and prostigmine through their inhibition of cholinesterase but are quickly and completely abolished by atropine.

Unlike acetylcholine, the drug is capable of exerting a physiologic effect when administered orally. When injected subcutaneously its actions appear to be more prolonged than those of acetylcholine, although the effect on the heart rate and blood pressure persists for only a few minutes. Its intravenous injection is dangerous.

Crystalline water-soluble salts of the base, acetyl-beta-methylcholine, are employed to produce the effects of the drug. The salts are more or less hygroscopic, and if this tendency is extreme, as in the case of the chloride, the crystals must be protected from atmospheric moisture until placed in solution. Acetyl-beta-methylcholine chloride is therefore not suitable for



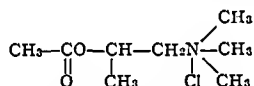
Britesun
Infra-Red
Lamp, Model
A-52.

oral administration in crystalline form but should be given in solution. The entire contents of containers of this salt should be put into solution immediately when these are once opened. Solutions of acetyl-beta-methylcholine chloride are fairly stable and will keep for at least two or three weeks. They are relatively stable to heat and may be refrigerated to delay mold growth.

The application of aqueous solutions of acetyl-beta-methylcholine chloride by the method of ion transfer (iontophoresis) to introduce this salt into the tissues by means of direct (galvanic) current is recognized as the best means to obtain the local effects of the drug on the extremities. General (systemic) effects are produced by this method but are less pronounced than when the drug is administered orally or by injection. The systemic effects produced in this way have not been observed to be of a serious or dangerous nature.

The following precautions should be observed in the administration of the drug: (1) Never administer intravenously because of the danger of cardiac arrest; (2) consider bronchial asthma, hyperthyroidism, coronary occlusion and any severe illness as contraindications; (3) avoid massage at the site of injection, except where this may be necessary to determine when a further injection is needed, and then only gently and with due caution; (4) advise recumbence during injection to avoid possible fainting; (5) the method of ion transfer (iontophoresis) should be employed only by those specially trained in such application and should not under any circumstances be used directly over ulcers or open wounds and only with care over scar tissue; extreme care is necessary to prevent burns by galvanism and the essentials of the "Safety Rules in Galvanism" outlined by Kovacs (Principles and Practice of Physical Therapy, vol. III, pp. 10 and 11) should be followed in the administration of the drug by this method; (6) prolonged therapy by any method of administration is inadvisable and is contraindicated when grave side reactions occur.

MECHOLYL CHLORIDE.—Acetyl-beta-methylcholine chloride.—Trimethyl-beta-acetoxy-propyl-ammonium chloride—The acetyl ester of beta-methylcholine chloride having the following formula:



Actions and Uses.—Mecholyl chloride is useful in the treatment of selected cases of paroxysmal auricular tachycardia not responding to the usual therapeutic measures, by subcutaneous injection only, in the palliative local treatment of chronic rheumatoid (atrophic) arthritis by the method of ion transfer (iontophoresis) only, and in the treatment of chronic ulcers, Raynaud's disease, scleroderma and other vasospastic conditions of the extremities, preferably by the local method of ion transfer (iontophoresis) but also by oral or subcutaneous administration when the former cannot be employed. For the prevention of attacks of paroxysmal tachycardia the drug is inferior to quinidine and is of no apparent value in other forms of tachycardia and in auricular fibrillation. Claims for the use of the drug in the treatment of bladder dysfunction, abdominal distention, atonic constipation, pelvic inflammation, functional dysmenorrhea, atrophic rhinitis, glaucoma and hypertension are not warranted on the basis of existing clinical evidence. (Also see preceding article, Acetyl-Beta-Methylcholine.)

Dosage.—Considerable variation in the oral dosage requirements is to be expected because mecholyl chloride is to some extent destroyed by the gastric juice. The therapeutically effective oral dose usually ranges from 0.2 to 0.5 Gm. (3 to 7½ grains) two or three times a day, administered by dissolving in a little water which may be added to milk to disguise the bitter taste. In overcoming vascular spasm due to moderate exposure to cold, oral doses of from 0.05 to 0.1 Gm. (¾ to 1½ grains) have been found to be effective. In Raynaud's disease, scleroderma and ulcers the effective oral dose may be somewhat higher.

The subcutaneous dose should be limited to 0.01 Gm. (¼ to ½ grain) on the first injection to test the patient's tolerance. If well tolerated, the dose may be cautiously increased up to 0.025 Gm. (about ¾ grain). This dose is usually adequate for injection when this method of administration is employed in the treatment of Raynaud's disease, scleroderma, chronic ulcers and other vasospastic conditions of the extremities. In paroxysmal auricular tachycardia from 0.02 to 0.04 Gm. (about ⅓ to ⅔

grain) is injected subcutaneously. If a second injection is required, it is advisable to wait about ten to twenty minutes until the effect of the first has disappeared, and then only after cautious gentle massage at the site of the first injection. Cumulative, or overdosage, effects may be quickly abolished by an injection of atropine sulfate 0.0006 Gm. (¼₁₀₀ grain).

For application of mecholyl chloride by the method of ion transfer (iontophoresis) it is customary to use a 0.2 to 0.5 per cent (1:500 to 1:200) solution of the drug in distilled water. The solution is applied by moistening the positive electrode fabric which is placed over or near the part to be treated. The strength and duration of the galvanic current regulates the dosage and should always be applied gradually and within the point of comfortable tolerance by the patient. The patient should be instructed to report any sensation of excessive heat or burning. If this occurs, the treatment should be stopped and an inspection made to determine if an electrode is improperly placed. The initial treatment should not exceed 5 to 10 milliamperes for thirty minutes. Subsequent treatments usually require from 25 to 30 milliamperes applied for twenty to thirty minutes. Each treatment should be restricted to a limited area such as one hand or one joint when several parts are involved. Three or four days is considered the most satisfactory interval between treatments. The number of treatments necessary to obtain results varies with the patient and with the type of lesion. In Raynaud's disease and scleroderma, ten or more treatments may be necessary to secure improvement; in chronic rheumatoid arthritis the treatments may be reduced to intervals of a week after the first four to six treatments; in varicose indolent and gangrenous ulcers, treatments may be given daily at the start to promote granulation of tissue and then reduced after the first few treatments to two or three times a week. During and after treatments by ion transfer (iontophoresis) the patient should be covered and protected from drafts and should remain quiet and be kept warm for about thirty minutes after each treatment before being permitted to resume activity.

Idiosyncrasy to mecholyl chloride may result in difficulty in breathing. If this is noted the treatment should be stopped and the patient raised to a sitting position. If untoward symptoms do not subside, atropine sulfate should be given hypodermically at once.

Manufactured by Merck & Co., Inc., Rahway, N. J. U. S. patent 2,040,146 (May 12, 1936; expires 1953). U. S. trademark 318,783.

Bottles Mecholyl Chloride (Crystals), 1 Gm. and 10 Gm.—For the preparation of solutions for oral administration and for ion transfer (iontophoresis).

Scaled Tubes Mecholyl Chloride (Crystals), 0.025 Gm.—For the preparation of solutions for subcutaneous injection

Mecholyl chloride occurs as a white, crystalline, very hygroscopic powder, possessing a slight odor; readily soluble in water and alcohol, insoluble in benzene and ether. The aqueous solution is neutral to litmus. Mecholyl chloride melts at 168 to 171 C.

Dissolve about 1 Gm. of mecholyl chloride in 10 cc. of water; to a 1 cc. portion add 1 cc. of alcohol and 1 cc. of sulfuric acid and heat in a steam bath (odor of ethyl acetate becomes perceptible); to another 5 cc. portion add 2.5 Gm. of potassium hydroxide and heat (odor of trimethylamine is noticed), to the remaining portion add an excess of silver nitrate solution (a white, curdy precipitate soluble in ammonium water results). Add 3 cc. of a 20 per cent aqueous solution of sodium perchlorate to 2 cc. of a 10 per cent solution of mecholyl chloride, shake thoroughly and cool in ice water; no precipitate is formed (acetylcholine). Moisten about 0.1 Gm. of mecholyl chloride with a 5 per cent solution of platinum chloride. Small rhombohedral plates are formed (distinction from acetylcholine chloride, which forms needles, and choline chloride, which forms no crystals). Dissolve 0.2 Gm. of mecholyl chloride in 2 cc. of sulfuric acid the solution is colorless (readily carbonizable substances).

Dry about 0.5 Gm. of mecholyl chloride, accurately weighed, to constant weight at 110 C.; the loss in weight does not exceed 1.5 per cent. Incinerate about 0.5 Gm. of mecholyl chloride, accurately weighed, in a platinum crucible; the residue does not exceed 0.1 per cent. Transfer about 0.5 Gm. of mecholyl chloride, previously dried at 105 C. to 110 C., to a 500 cc. Kjeldahl flask and determine the nitrogen content according to the official method described in Methods of Analysis of the Association of Official Agricultural Chemists: the percentage of nitrogen is not less than 7 nor more than 7.25.

Dissolve about 0.4 Gm. of mecholyl chloride, previously dried at 105 C. to 110 C. and accurately weighed, in 15 cc. of water in an Erlenmeyer flask; add 40 cc. of tenth normal sodium hydroxide solution and heat on the steam bath for forty five minutes; stopper and allow to cool, titrate the excess of sodium hydroxide solution with tenth normal hydrochloric acid using phenolphthalein as an indicator the amount of acetyl (CH₃CO—) is not less than 21.7 per cent nor more than 22.3 per cent.

Transfer about 0.4 Gm. of mecholyl chloride, previously dried at 105 C. to 110 C. and accurately weighed, to a 100 cc. volumetric flask, dissolve in 50 cc. of water, with agitation add 30 cc. of tenth normal silver nitrate solution, add 5 cc. of nitric acid, and finally add water to final volume and mix thoroughly. Filter through a dry filter into a dry flask, rejecting the first filtrate; titrate 50 cc. of the filtrate with tenth normal ammonium thiocyanate solution using ferric alum as an indicator the amount of chlorine (Cl—) is not less than 17.9 per cent nor more than 18.4 per cent.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 6, 1941

THE NEW PHARMACOPEIA—U. S. P. XII

The Committee of Revision of the U. S. Pharmacopeia has issued a proposed list of preparations that will be included in the forthcoming twelfth revision of the U. S. Pharmacopeia. In a separate listing appear those preparations which were official in U. S. P. XI but are not to be included in the new edition. These are referred to as "deletions." Both lists are printed elsewhere in this issue of THE JOURNAL (page 883). The committee is to be congratulated for its splendid work in bringing this important book of official drugs into line with the most recent medical and pharmacologic advances. Perhaps never before has the pharmacopeial list been brought so nearly into apposition with the best medical practice of the day.

Of greatest interest, of course, is the imposing list of about one hundred and eighty-nine new inclusions, which naturally reflects the recent rapid advances, especially in chemotherapy, vitamin and glandular therapy. One finds the sulfonamide drugs up to and including sulfathiazole, the synthesized vitamins up to and including menadione. Endocrinology is represented by such recent developments as testosterone propionate and desoxycorticosterone acetate (the committee has sensibly abbreviated desoxycorticosterone to desoxycortone). Of the newly admitted drugs, about two thirds are now included in New and Nonofficial Remedies, a tacit acknowledgment of the important role played by this work in providing the physician with early authoritative information on new drugs. Mention should be made of the large number of tablets, including acetylsalicylic acid tablets, that have been derived from the National Formulary.

In the previous volume the Committee of Revision began the policy of including preparations bearing trademarked names, when the trademark had been dedicated to the public. The current Committee of Revision has taken another important step forward, perhaps the most significant step in two decades, in including preparations that are subject to patent control. Examples are amphetamine (Benzedrine), butaprobenz sulfate

(Butyn Sulfate), butyl amino benzoate (Butesin), chlorazodine (Azochloramide), diphenyl hydantoin soluble (Dilantin Sodium), mercurphylline (Mercurpurine), mersalyl (Salyrgan), metarsen (Mapharsen), neostigmine bromide (Prostigmine Bromide) and quinacrine (Atabrine). One notes finally the admission of insulin, crystalline zinc insulin and protamine zinc insulin.

The committee apparently expects some protests on its excellent list of "deletions," for it appends a series of brief statements defending each one. These may be roughly classified as (1) those simply found wanting, (2) those replaced by newer and better preparations, (3) pharmaceutical "necessities" found unnecessary and (4) those whose value is outbalanced by danger or inconvenience of use. Of the approximately fifty-five omissions, about thirty are in the "found wanting" category. These include such preparations as acetyltannic acid, albumin tannate, arsenic triiodide and the familiar "brown mixture." In the category of some sixteen superseded drugs are acriflavine, asafetida, copaiba, dichloramine-T, iodoform, merbaphen and extract of nux vomica. Few enlightened and progressive physicians would sharply disagree with the committee's decisions on deletions.

STUDIES IN POLIOMYELITIS

Among the most important unsolved problems in infantile paralysis is the port of entry of the virus. The recent experimental work of Howe and Bodian, supported by the Commonwealth Fund and reported in the August issue of the *Bulletin of the Johns Hopkins Hospital*, presents an opportunity for reviewing some of the newer facts and concepts with regard to the nature of this disease.

In estimating the rate of progression of poliomyelitis virus in the sciatic nerve of the rhesus monkey,¹ the investigators inoculated the nerve at a single point and subsequently cut it at a higher level, at various intervals in different animals, to prevent an infective dose of virus from reaching the spinal cord. The rate was estimated to be approximately 2.4 mm. an hour. An attempt was made thus to control the variability introduced by the incubation period. The method of inoculation, the homogeneity of the virus suspension and the latent period before spread begins were carefully controlled. The latent period was estimated to be about eleven hours.

The authors² also studied the movements of poliomyelitis virus in the central nervous system of three groups of rhesus monkeys after transection of the spinal cord in the midthoracic region. The first group consisted of 4 animals in which paralysis was induced by intracerebral or intranasal inoculation. Virus and

1. Bodian, David, and Howe, H. A. The Rate of Progression of Poliomyelitis Virus in Nerves, *Bull. Johns Hopkins Hosp.* 69:79 (Aug.) 1941.

2. Howe, H. A. and Bodian, David. The Effect of Spinal Transection on the Spread of Poliomyelitis Virus in the Nervous System of the Rhesus Monkey, *Bull. Johns Hopkins Hosp.* 69:86 (Aug.) 1941.

lesions of poliomyelitis were demonstrated in 1 case in the lumbar cord. The second group contained 4 animals in which the sciatic nerve was inoculated. Two of these showed progression of virus into the cord above the level of transection—possibly along the paravertebral sympathetic chains. The third group consisted of 11 animals which were inoculated directly into the lumbar cord. Four of these had bilateral sympathectomies of two to three ganglions at the level of the spinal cord transection. Eight of this third group of 11 spinal animals showed progression of virus into the remainder of the neuraxis. The experiments demonstrated clearly that interruption of the continuity of the spinal cord, the sympathetic nervous system and the subarachnoid space did not prevent virus from passing into the rostral portion of the neuraxis. The only possible remaining routes for virus were the lymphatics, the blood stream or some unusual nervous connections. The authors suspect the participation of the vagus nerve in the cases in which sympathectomy had been performed. Four of the animals in particular showed an unusual clinical picture which suggested a vagus syndrome. Examination of the brain of these animals in serial sections revealed unusually heavy involvement of the vagal nuclei in the medulla.

In an attempt to throw light on the variability in the resistance of a cell to virus, Howe and Bodian³ sectioned the olfactory tracts. After some time the cells of the olfactory bulbs developed a refractoriness to virus. The authors concluded that the metabolic changes in the cell body which accompany the regeneration of the axon brought about a striking increase in the resistance of these cells to destruction by poliomyelitis virus. These experiments represent an original contribution to a wholly uninvestigated field of virus-host relationship.

The problem of the existence of a nonparalytic or arrested poliomyelitis involves the following questions: 1. Can the virus of poliomyelitis enter the central nervous system and spread within it without production of demonstrable lesions or of clinical symptoms referable to the nervous system? 2. What is the minimal amount of pathologic change which may be found in nonparalytic cases, and can the pathologic process be arrested before the typical distribution of lesions in the brain is fully developed? 3. How far can the pathologic process extend in the brain and spinal cord without being severe enough to produce clinically evident paralysis?

Bodian and Howe⁴ were able to present evidence from results in chimpanzees and rhesus monkeys that the disease of the nervous system produced by the virus of poliomyelitis may be spontaneously arrested in any stage after the virus has entered the nervous system.

This arrest may take place preceding any paralysis, thus producing a nonparalytic attack in which lesions are present in the central nervous system, or it may occur after the onset of paralysis. The minimal degree of pathologic change observed in nonparalytic cases is a regional destruction of neurons, associated with characteristic mesodermal-glial infiltrations and perivascular cuffing, at and near the site of entry of the virus into the central nervous system. The spinal cord need not be involved. The maximal degree of pathologic change observed in nonparalytic cases is practically equivalent in distribution and severity to the pathologic involvement which is found in paralytic cases. The absence of observable paralysis in many cases, according to the authors, is due to the fact that, although many nerve cells are destroyed in the spinal cord, the distribution of the destroyed motor neurons is too scattered to involve a single functional muscle group sufficiently to produce clinically evident functional loss. These results parallel closely those of Sabin and Ward⁵ in rhesus monkeys, with the exception that the authors have shown that there need not be any lesions in the cord. In fact, they state that the virus of poliomyelitis is capable of producing an encephalitis, with or without the associated clinical symptoms, in the absence of any pathologic change in the spinal cord.

In their experimental approach to the problem of the port of entry of virus, the authors selected chimpanzees because of their closeness to man as a primate and because of their reported susceptibility to poliomyelitis by natural contagion. Various concepts have been entertained as to the port of entry of poliomyelitis of man. It was believed to originate in the upper respiratory tract and from there to invade the nervous system. The olfactory portion of the nasal mucosa was, by many, considered to be the original site; prophylactic measures were based on this concept. It was also believed that virus may enter the skin through an insect bite or through direct contamination. The gastrointestinal tract as the primary seat loomed as a possibility when it was found that virus was frequently present in stools. The theory of nasal infection made the greatest appeal, particularly because it found support in experimental studies which showed that virus instilled intranasally in rhesus monkeys could invade the nervous system only by the olfactory pathway. Howe and Bodian⁶ inoculated 6 chimpanzees in pairs with human stools containing poliomyelitis virus. Two animals received the inoculum intranasally, 2 introrally and 2 by stomach tube. In each of the last 2 pairs 1 animal had been subjected to bilateral olfactory tract section. All the animals contracted poliomyelitis. The entire brain stem and considerable portions of the cortex, spinal cord and peripheral nervous system were

3. Howe, H. A., and Bodian, David: Refractoriness of Nerve Cells to Poliomyelitis Virus After Interruption of Their Axons, *Bull. Johns Hopkins Hosp* 69:92 (Aug.) 1941.

4. Bodian, David, and Howe, H. A.: The Pathology of Early Arrested and Nonparalytic Poliomyelitis, *Bull. Johns Hopkins Hosp* 69:135 (Aug.) 1941.

5. Sabin, A. B., and Ward, Robertson: Nature of Nonparalytic and Transitory Paralytic Poliomyelitis in Rhesus Monkeys Inoculated with Human Virus, *J. Exper. Med* 73:757 (June) 1941.

6. Howe, H. A., and Bodian, David: Poliomyelitis in the Chimpanzee: A Clinical Pathological Study, *Bull. Johns Hopkins Hosp* 69:149 (Aug.) 1941.

studied in serial sections. Lesions in the olfactory bulbs and secondary olfactory nuclei were present only in the animals receiving intranasal inoculations. There was a good correlation between the development of bulbar paralysis and intraoral inoculation. One animal of this pair showed definite microscopic evidence that the virus had reached the central nervous system over the fifth and possibly the ninth nerve. In the animals which received stomach tube inoculations there was microscopic evidence that the virus had reached the brain by ascending from the spinal cord. It was convincingly demonstrated that invasion of the central nervous system by way of the olfactory bulbs takes place only after intranasal inoculation. The knowledge acquired with regard to the distribution of lesions and differences in the severity of involvement of certain centers after inoculation of virus into various ports has suggested to Howe and Bodian that a comparative analysis of the distribution of the lesions in human poliomyelitis should lead to a determination of the port of entry in man, based on pathologic evidence alone. Harbitz and Scheel of Christiania, Norway, as early as 1907 described the distribution of lesions of the brain in 17 cases of human poliomyelitis and noted the absence of lesions in the olfactory bulbs and tracts. These results were substantiated by a number of other observers, particularly Swan. Many investigators have now come to regard the absence of lesions or virus in the olfactory bulbs as important evidence in ruling out the olfactory route as the predominant port of entry in man. Howe and Bodian⁷ had an opportunity to study 13 fatal cases observed during the late summer of the 1940 epidemic in Indiana, Ohio and West Virginia. Thirteen human brains, 8 of which included complete olfactory bulbs, were studied. Uninterrupted serial sections of the olfactory bulbs and brain stems of these brains were prepared, as were also serial sections of large blocks of cerebral cortex from the frontal, parietal, temporal and occipital lobes. The sections of the brains were cut at 60 microns and those of the olfactory bulbs at 10 microns, all being stained with galloeyanin. The material was obtained either from rapidly fatal cases of poliomyelitis or from cases in late stages of the acute illness. It is to be expected therefore that the spread of lesions was fully developed, and comparable in that sense with severely paralytic experimental cases. The authors were not able to obtain human material in the preparalytic or extremely early stage. The most striking single observation made by them was that the olfactory bulbs were not invaded in the majority of their cases. In no case was there indication that the olfactory port was operative. The distribution of lesions in the human brain was found to be entirely comparable with that seen in the rhesus

monkey and the chimpanzee when these animals are inoculated by nonnasal ports. This indicates that dissemination of virus in the central nervous system follows fiber pathways in the same pattern demonstrated for other observations; also the differential cell susceptibilities within the brain and spinal cord are the same.

Many factors point to the alimentary tract as a locus of virus proliferation. In many instances the material suggests that the spinal cord is the primary site of invasion of the central nervous system. It has not been possible, however, for the authors to determine the precise pathway of the virus from the intestine to the central nervous system except in 1 case in which the vagus nerve was strongly suggestive. In 1 case there was evidence that the nerves supplying the pharynx were the path of entry. This careful microscopic study presents additional evidence that there may be many ports of entry of the virus and that the olfactory route is probably of little importance in man.

Current Comment

DIPHTHERIA PREVENTION IN NEW YORK STATE

A press release by the New York State Department of Health¹ indicates that fifty-two of sixty-nine upstate communities reported 35 per cent or more of children under 5 years of age immunized against diphtheria as of June 1, 1941. The percentages were based on population estimates from births and deaths as of June 1, 1940. Godfrey² showed that immunization of 35 per cent or more of children under 5 years in a given community would make that community reasonably safe from an outbreak of the disease, although unimmunized children would, of course, remain susceptible, and there might be sporadic occurrences of diphtheria. The same study by Godfrey showed also that immunization of much larger percentages of children of school age did not protect the community against an outbreak of diphtheria. In the light of these studies, it is of particular interest to note the three cities of Peekskill, Middletown and Johnson City with 100 per cent of children under 5 years immunized against diphtheria, and Newburgh with 99 per cent. On the other hand, seventeen cities—Buffalo, Cortland, Lockport, Dunkirk, Cohoes, Fulton, Rensselaer, Garden City, Glen Cove, Hempstead, Rockville Center, Floral Park, Freeport, Lynbrook, Mineola, Watervliet and Valley Stream—had less than 35 per cent immunized. Buffalo is the only city of considerable size in the latter list, indicating that size alone is not the determining factor. In fact, "all of the twenty-two municipalities in the 25,000 or more population groups" reported 35 per cent or more of children under 5 immunized as of June 1; whereas

1 New York State Department of Health, Albany, Press Release, mimeographed, July 14, 1941.

2 Howe, H. A., and Bodian, David: Neuropathological Evidence on the Portal of Entry Problem in Human Poliomyelitis, *Bull. Johns Hopkins Hosp.* 69: 185 (Aug.) 1941.

2 Godfrey, Edward S.: Study in the Effectiveness of Diphtheria and Tetanus Antitoxin in Relation to the Active Immunization of Certain Age Groups, *Am. J. Hyg.* 22: 237 (March) 1932; Godfrey, Edward S.: Personal Communication, *Diphtheria Immunization Record*, 11: 122: 62 (Aug.) 1941.

only thirty-one of the forty-seven municipalities of between 10,000 and 25,000 population were able to make such a report. Diphtheria is a disease which a community may virtually choose to have or not to have. Since the bacteriology of the disease, its immunology and the community methods for the prevention of outbreaks are known, there would seem to be no good reason why every community, through joint effort of health officials, physicians and parents, should not be free from diphtheria. Only by its eradication in local communities can diphtheria be eradicated from the national disease picture. —

THE PUEYO VACCINE FOR TUBERCULOSIS

Recently newspapers and magazines have featured pictures of riots in the Argentine and in Ecuador among patients suffering with tuberculosis who, it seems, were demanding of the government the right to be inoculated with a new vaccine supposed to be useful in the treatment of this disease. The vaccine was apparently developed by one Jesus Pueyo, who was a laboratory bacteriologic assistant in the Medical School of Buenos Aires. The first announcement of his alleged discovery appeared in the newspapers of that city. Incidentally, he had previously announced a similar vaccine for leprosy. Because of the method of presentation of this discovery, scientific physicians were inclined to discount it completely; indeed the medical authorities simply refused to make tests of the product. Later the minister in charge of these matters in the Argentine invited Mr. Pueyo to demonstrate his preparation in the state laboratories. The results of this scientific attempt were wholly negative, and the minister forbade the use of the vaccine in the Argentine. In Uruguay it is reported that the minister of health is about to promulgate a similar resolution, and in Chile the director of public health has ordered that a study of this product be made, limited exclusively to animals. Because of the activities of the discoverer in the Argentine, according to a report published in *La Nacion* of Buenos Aires, the National Department of Hygiene has imposed a fine on the investigator. It was proved that he had distributed the vaccine without any permit from the government Office of Hygiene. He was therefore assessed a fine of 1,000 pesos.

HEALTH EDUCATION IN CINCINNATI

The Public Health Federation of Cincinnati has issued a report on its health education program from June 1940 to June 1941.¹ The program outlined is carried out through the Public Health Federation, which is a federated agency in which are represented many public health groups in the city of Cincinnati. This health education program was carried on by the federation acting as the agency for a cooperative effort by the Cincinnati Academy of Medicine, the board of health and the other public health agencies. In carrying this health education program to the public, use was made of newspaper articles, radio dramatizations,

car cards, factory posters, bulletins to parent-teacher associations, cards to physicians, public health lectures, exhibits, motion picture showings and printed matter. The newspaper articles are carried daily as educational columns under the title "Save a Life." Car cards are placed in all the street cars and some busses. Factory posters are posted in all factories, and physicians' cards keep all physicians in close touch with the health education program. Included in the list of subjects were thirty-eight principal topics including anemia, burns, child health, diabetes, eyes, first aid, general health, hearing, influenza, mental hygiene, physical examination, rabies, safety, tuberculosis and venereal diseases. In addition a large miscellaneous classification included fifty-four other topics, such as allergy, constipation, deodorants, fainting, glands, headaches, industrial health, marihuana, nerves, overweight, posture, quacks, rats, smoke, tonsils, underweight, women, yellow fever and roentgen rays. This report exemplifies in simple practical form the principles of health education which can be applied in any community, large or small. The grouping of agencies and their cooperation through a federation is a practical demonstration of the community health council recommendation which has often been made but too seldom put into effect. The fact that Cincinnati has done it so well should suggest to public health leaders in other communities the possibility of doing likewise. —

STATISTICS IN MEDICINE

The importance of improving the standards of statistical treatment of clinical and laboratory data has been previously discussed in these columns.² Recently Campbell,² in a consideration of the present statistical inadequacy of many of the papers now appearing in the literature, gave a typical illustration: "In the series with delayed operation, the mortality was 1.5 per cent, whereas in the series with immediate operation, the mortality was 4.8 per cent. Thus it is seen that death occurs more than three times as frequently after immediate operation." While it is true that 4.8 is more than three times 1.5, from the standpoint of recovery there is little difference between 95.2 and 98.5! Any two therapeutic procedures, therefore, which result in such high percentages of recovery are not as different in their results as the quoted method of comparison would imply. The important fact is that the difference is 3.3 and not that 4.8 is three times more than 1.5. This, of course, is only one example, but it is clear that many clinicians still almost entirely neglect satisfactory criteria of statistical analysis in their scientific writings. The necessary technics can be reasonably easily acquired and applied to medical papers, especially those which utilize percentages in their conclusions. Campbell also concludes that medical students should receive formal education in statistical procedure and that medical editors should demand of medical authors that their figures and data be statistically sound. The laxities of the present clearly foreshadow significant developments along these lines.

1. Health Education Program, June 1940-41, Public Health Federation, Cincinnati, mimeographed. Undated.

2. Medical Statistics, editorial, J. A. M. A. 109: 713 (Aug. 28) 1937.
2. Campbell, H. E.: The Statistical Method—A Vital Tool in Clinical Medicine, Surgery 9: 825 (June) 1941.

MEDICAL PREPAREDNESS

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.

REHABILITATION OF CANDIDATES REJECTED FOR THE AIR SERVICE

The American Flying Services Foundation, founded by World War fliers, has been incorporated and a medical division is being developed for the purpose of correcting, on a nonprofit basis, the physical defects which have already caused the rejection of numerous candidates for the military air services, many of whom can be reclaimed. The medical headquarters of the American Flying Services Foundation is at 140 East 54th Street, New York City. The medical director is Dr. S. M. Strong, and the medical council comprises:

Lester M. Hubby, M.D., Chairman	Howard Lilienthal, M.D.
Meredith F. Campbell, M.D.	Henry H. Lyle, M.D.
Edmund Prince Fowler, M.D.	Charles H. May, M.D.
Howard Fox, M.D.	Charles A. McKendree, M.D.
Robert Halsey, M.D.	L. M. Waugh, D.D.S.
J. Herbert Lawson, M.D.	David H. Webster, M.D.

This group is already functioning, and a number of air service applicants have already been successfully treated in the New York area, in Columbus, Ohio, and in the area about Los Angeles. It is planned to organize at many points in the United States medical groups to render this service who will give their services gratis or charge only for material used or extremely small fees, their main purpose being to assist the national defense program by adding to the number of airmen who are so urgently needed in the first line of defense. The medical division has no connection with draft boards or with the Selective Service but is in close cooperation with the United States military services. A high percentage of the candidates for enlistment as flying cadets are being rejected because of the strict physical standards required. The medical division of the American Flying Services Foundation will find the doctor, the clinic, the hospital and other necessities for the care and treatment of those rejected whose defects can be remedied to permit them to enter the flying services. These defects are mostly associated with the eye, nose, teeth, cardiovascular or neuromuscular systems, and the longest period spent in the hospital by any one of the patients thus assisted so far has been fifteen days.

The American Flying Services Foundation is young and is entirely dependent on public contributions for its support. The foundation headquarters are at 60 East 42d Street, New York City. Telephone, Vanderbilt 6-0977.

ANOTHER HOSPITAL SHIP FOR THE NAVY

The U. S. S. *Solace*, a hospital ship, was commissioned at Brooklyn, August 9. The *Solace*, which was formerly the liner *Iroquois*, has been fitted out as a four hundred bed hospital, the equal of the most completely equipped hospital of its size on shore. The ship carries thirteen medical officers, thirteen nurses, three pharmacists, three dental officers and one hundred and thirty-eight hospital corps men, besides its operating crew. The *Solace* has six hospital wards, two operating rooms, an eye, ear, nose and throat room, a urologic operating room, a roentgen department, a clinical laboratory, a physical therapy department and a pharmacy. There is a special diet kitchen besides the regular kitchen, and each ward has its own pantry for the preparation of special diets. Meals are served to patients on trays brought to the bedside in electrically heated food carts. An elevator permits movement of patients with a minimum of disturbance from one ward to another or to the operating rooms.

Ample deck space gives convalescents opportunities to get into the open air as well as provide recreation for members of the ship's crew. The *Solace* is painted white with a green band and a red cross on each side, the colors prescribed for a hospital ship by the terms of the Hague convention. The senior medical officer assigned to the *Solace* is Capt. Harold L. Jensen, Medical Corps, U. S. Navy, and the executive officer is Comdr. Thomas E. Flaherty. The commanding officer of the ship is Capt. Benjamin Perlman, U. S. Navy. The only other hospital ship in the U. S. Navy is the U. S. S. *Relief*, which was commissioned about 1919.

ARMY HOSPITAL FOR PSYCHOPATHIC CASES

The War Department has leased from the state of Kentucky for the duration of the emergency and for two years thereafter, for a fee of \$1 a year, a hospital solely for the treatment of psychopathic patients. The hospital, which is 4½ miles north of Danville, Ky., has a capacity of two hundred and fifty beds and is equipped especially for the treatment of the mentally ill. The War Department has authorized the expenditure of \$500,000 for the construction of store houses, officers' quarters, barracks, nurses' quarters and recreation buildings.

MEDICAL OFFICERS TO BE TEMPORARY COLONELS

The War Department has announced that the following forty-three medical officers will be temporarily promoted to the rank of colonel, Army of the United States. In this announcement, which included, in all, nearly three hundred officers from various branches of the Army, it was stated that no increases of pay are involved in most of these promotions. The first list was selected mainly from records of performance over the last ten years. Future lists will be based more and more on the performance of duty since last July and less on performance of duty prior to the emergency. The final list will probably be based on performance of duty during the emergency:

ASH, James E., Philadelphia.	KENNER, Albert W., Fort Banks, Mass.
BEACH, George C., Jr., Topeka, Kan.	KRAFFT, Henry L., Otto, N. Y.
BERLE, Charles K., Manila, P. I.	LEHMAN, Asa M., Culbertson, Neb.
BETHEA, James A., Florence, S. C.	McKIE, Alva B., Canton, Miss.
CARBONELL, Arturo, Cabo Rajo, Puerto Rico.	MOORE, Harvard C., Bar Harbor, Maine.
CARROLL, Percy J., East St. Louis, Ill.	NOYES, Edward A., Portland, Ore.
COATES, Edward A., Jr., Winthrop, Mass.	PETERS, Frederick H., Buffalo, Indiana, Iowa.
CORBETT, Sewall M., Arlington, Va.	RILEY, Charles W., Baltimore.
CORRY, John F., Philadelphia.	SCHULE, Paul A., Preston, Iowa.
DENISON, Walcott, St. Louis.	SIMMONS, James S., Washington, D. C.
DIBBLE, John, Camden, N. J.	SINCLAIR, Charles G., Port Huron, Mich.
DUNHAM, George C., Portland, Ore.	SLOAT, Jesse L., Washington, D. C.
EMERSON, Gouverneur V., Milford, Pa.	STACEY, Royal K., Dallas, Texas.
FOX, Roy E., Dayton, Ohio.	STANLEY, Oramel H., Brunswick, Maine.
FREER, Arden, Neversink, N. Y.	WATTS, John W., Montgomery, Ala.
GRANT, David N. W., Richmond, Va.	WILLIAMS, Robert P., Greencastle, Ind.
HAGINS, William A., Oliver, Ga.	WILSON, Barton L., Greenville, N. C.
HAINES, Edgar F., Fairhaven, Mass.	WILSON, Frank W., Greenville, N. C.
HALL, John R., Marshall, Mo.	WINN, Dean F., Hiram, Ga.
HAWLEY, Paul R., College Corner, Ohio.	
HILL, Robert B., Statesville, N. C.	
HUME, Edgar E., Frankfort, Ky.	
HUTTER, Charles G., Chicago.	

ARMY RESERVE OFFICERS ORDERED TO ACTIVE DUTY

FIRST CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, First Corps Area, which comprises the states of Maine, Vermont, New Hampshire, Rhode Island, Massachusetts and Connecticut:

ARCHAMBAULT, Henry A, 1st Lieut, Barre, Vt, Fort H G Wright, N Y
CHAREST, Leandre R, 1st Lieut, Manchester, N H, Fort Williams, Maine
CHIAMPÀ, Francis P, 1st Lieut, Brighton, Mass, Camp Edwards, Mass
CLOUGH, Joseph M, 1st Lieut, New London, N H, Fort Ethan Allen, Vt

Orders Revoked

BOTTAMINI, Joseph T, 1st Lieut, Brandon, Vt
BUNCE, James W, Major, North Adams, Mass
DANIELS, Samuel D, 1st Lieut, Greenwood Mountain, Maine
DeMINICO, Luigi B, 1st Lieut, Brighton, Mass
DUZMATI, Paul P, 1st Lieut, Bridgewater, Conn

COGAN, Michael A, 1st Lieut, Springfield, Mass, Camp Hulen, Texas.
COMEAU, William J, 1st Lieut, Haverhill, Mass, Fort Devens, Mass
CRONE, Neil L, Captain, Belmont, Mass, Governor's Island, N Y.
DANIELS, Samuel D, 1st Lieut, Greenwood Mountain, Maine, Bangor, Maine
KELLEY, Thomas T, 1st Lieut, Brookline, Mass, Fort Adams, R. I.
LEONARD, George A, Lieut Col, Waterbury, Conn, Camp Blanding, Fla
ROTHMAN, Maurice S, 1st Lieut, Quincy, Mass, Army Base, Boston.
SHINNEY, Arthur P, 1st Lieut, Everett, Mass, Camp Forrest, Tenn.
VALENSKI, Thaddens J, 1st Lieut, Thompsonville, Conn, Camp Forrest, Tenn
WEBSTER, David K, Lieut, Concord, N H, Fort Banks, Mass
WEINBERG, Julius, 1st Lieut, Concord, N H, Fort Banks, Mass

THIRD CORPS AREA

The following additional medical reserve officers have been ordered to extended active duty by the Commanding General, Third Corps Area, which comprises the states of Pennsylvania, District of Columbia and Maryland:

ABERNETHY, Hugh Charles, 1st Lieut, West Chester, Pa, Fort Belvoir, Va
AMBLER, John Thompson Brown, 1st Lieut, Roanoke, Va, Camp Lee, Va
BROSE, Nicholas Albert, 1st Lieut, Pittsburgh, Holabird Quartermaster Depot, Baltimore
BROWN, Manuel, 1st Lieut, Baltimore, Camp Shelby, Miss
BUCKLEY, Michael Lester, 1st Lieut, Arlington, Va, Fort Belvoir, Va
CAMPBELL, Hawes, Jr, 1st Lieut, Hanover, Va, Fort Belvoir, Va
CASEY, Adrian Vincent, 1st Lieut, Scranton, Pa, Camp Lee, Va
DEAN, Francis DeSales, Captain, Washington, D C, Camp Lee, Va
DINEEN, Francis Andrew, 1st Lieut, Kittanning, Pa, Fort George G. Meade, Md
EINHORN, Nathan Harry, Captain, Philadelphia, Camp Lee, Va

Orders Revoked

BUCKLEY, Michael Lester, 1st Lieut, Arlington, Va
BYERS, John Maxwell, 1st Lieut, Hyattsville, Md
FERRARO, Francis Peter, 1st Lieut, Sharpsburg, Pa
FORSTER, Hans Walter, Jr, 1st Lieut, Philadelphia

EVANS, Frederick James, Jr, 1st Lieut, Edgewood, Pa, Fort Belvoir, Va
FERRARO, Francis Peter, 1st Lieut, Sharpsburg, Pa, Camp Lee, Va
GAALAAS, Albin Felix, Captain, Pasadena, Md, General Dispensary, Baltimore
HENDERSON, Harry Heim, 1st Lieut, Richmond, Va, Camp Lee, Va
HOFTMAN, Franklin David, 1st Lieut, Greensburg, Pa, Camp Lee, Va
KANE, Sydney Heller, 1st Lieut, Philadelphia, Fort Myer, Va
KATZENSTEIN, Lawrence, 1st Lieut, Baltimore, Fort George G. Meade, Md
KEMICK, Irvin Bernard, 1st Lieut, Baltimore, Fort George G. Meade, Md
MAYS, John Richard Shannon, Captain, Baltimore, Fort Belvoir, Va
McFARLANE, Paul, Captain, Scottsville, Va, Fort George G. Meade, Md
PLUME, Theodore Waldimar, 1st Lieut, Abington, Pa, Camp Lee, Va
PRICE, Henkel Moser, 1st Lieut, Martinsville, Va, Camp Lee, Va
RATTNNE, Edward, 1st Lieut, Elkton, Va, Fort George G. Meade, Md.
SORRELL, William George, 1st Lieut, Amelia, Va, New Cumberland, Pa
WEINBERG, Tobias, 1st Lieut, Baltimore, Camp Lee, Va

FREEDMAN, Donald Kenneth, 1st Lieut, Washington, D C
PRICE, Henkel Moser, 1st Lieut, Martinsville, Va
SINGLETON, Albert Olin, Jr, 1st Lieut, Philadelphia

FOURTH CORPS AREA

The following additional medical reserve corps officers have been ordered to active duty by the Commanding General, Fourth Corps Area, which comprises the states of Tennessee, North Carolina, South Carolina, Alabama, Georgia, Mississippi, Florida and Louisiana:

BURNS, Francis R, 1st Lieut, Birmingham, Ala, Fort Oglethorpe, Ga
CENTER, Abraham Hyman, 1st Lieut, Savannah, Ga, Fort Jackson, S C
CONE, Wallis Dicks, 1st Lieut, Williston, S C, Fort McClellan, Ala.
COVINGTON, Furman Payne, 1st Lieut, Thomasville, N C, Camp Livingston, La
CREECH, Robert Weller, 1st Lieut, Memphis, Tenn, Fort Benning, Ga
DOUGLAS, Joseph W, 1st Lieut, Brewton, Ala, Camp Stewart, Ga
EVERHART, Merrill Wesley, Captain, New Orleans, New Orleans Port of Embarkation & General Depot
FINK Irv S, 1st Lieut, Mobile, Ala, Fort McPherson, Ga
FLYNN, James T, Jr, 1st Lieut, Charlotte, N C, Fort McClellan, Ala
GADBERRY, Eugene W, 1st Lieut, Nashville, Tenn, Fort Jackson, S C
GALLAGHAN, Harry Q, 1st Lieut, Coughatta, La, Camp Polk, La
GEORGE, Wallace E, 1st Lieut, West Columbia, S C, Fort Benning, Ga
GILL, Euclid Borland, 1st Lieut, New Orleans, Camp Shelby, Miss
GISH, George Edward, 1st Lieut, Memphis, Tenn, Camp Livingston, La
GOODMAN, Sanders Acme, 1st Lieut, Greenville, Miss, Fort Benning, Ga

Orders Revoked

BROWN, Richard Kyle, 1st Lieut, Greenville, S C.
DONATHAN, Earl R, 1st Lieut, Etowah, Tenn
EVANS, Kenneth P, 1st Lieut, Sylvauga, Ala
HARGIS, Albert Sydney Jr, 1st Lieut, Birmingham, Ala
HENDERSON, Hilliard H, Jr, 1st Lieut, Birmingham, Ala
HENRY, John A, 1st Lieut, Atlanta, Ga
HUEY, Thomas F, Jr, 1st Lieut, Anniston, Ala
KOPFLER, Marion E, 1st Lieut, New Orleans

HUTCHINSON, Robert H, 1st Lieut, Durham, N. C, Camp Shelby, Miss
JOHNSON, George E, 1st Lieut, Uriah, Ala, Fort Benning, Ga
JONES, Albert Mitchell, 1st Lieut, Memphis, Tenn, Fort Jackson, S C.
KELLEHER, Robert C, 1st Lieut, New Orleans, Camp Livingston, La.
KORNEGAY, Robert D, 1st Lieut, Rocky Mount, N C, Fort McPherson, Ga
LIEPPMAN, Jack E, 1st Lieut, Shreveport, La, Ft Jackson, S C
MASSENGILL, Frank C, 1st Lieut, Brookhaven, Miss, Camp Livingston, La
McCREARY, Frank D, Major, Carville, La, Camp Livingston, La
MARCUS, Hyman, 1st Lieut, Eutawville, S C, Camp Davis, N C
MOORMAN, John Dement, 1st Lieut, Huntsville, Ala, Fort Jackson, S C
NABOS, John T, 1st Lieut, New Orleans, Fort McClellan, Ala
SULLIVAN, Edgar Nelson, 1st Lieut, Florence, S C, Camp Livingston, La
VALENTINE, Frank, 1st Lieut, Western State Hospital, Tenn, Fort Barrancas, Fla
WARREN, John Windiate, Jr, 1st Lieut, Memphis, Tenn, Fort Jackson, S C
WELLS, James Ralston, Major, Daytona Beach, Fla, Camp Shelby, Miss.
WILLIAMS, Ernest H, 1st Lieut, Rocky Mount, N. C, Fort Benning, Ga
WILSON, Dale Sloan, 1st Lieut, Miami, Fla, Fort Jackson, S C
WITT, William J, 1st Lieut, Memphis, Tenn, New Orleans Port of Embarkation and General Depot

LOWENSTEIN, Sol L, 1st Lieut, Nashville, Tenn
MERRITT, J Webster, 1st Lieut, Jacksonville, Fla
PIZZOLATO, Philip, 1st Lieut, New Orleans
RAGGIO, Francis W, Jr, 1st Lieut, New Orleans
ROBBINS, Bernard L, 1st Lieut, Miami Beach, Fla
ROPER, C James, 1st Lieut, Jasper, Ga
SEWELL, Bennette N, 1st Lieut, Boyce, La
SHERER, Raymond J, 1st Lieut, Jasper, Ala.

SMITH, Leo 1st Lieut, Wayercross, Ga
THOMAS, John Henry, 1st Lieut, Gainesville, Fla
THOMPSON, Charles C, Jr, 1st Lieut, Columbia, Miss
TRAPP, Walter Russell, 1st Lieut, Tusculmba, Ala

WALLIS, Thomas Henry, 1st Lieut, Ocala, Fla
WATSON, Francis Marion, 1st Lieut, Chipley, Fla
WOOD, Charles Spencer, 1st Lieut, New Orleans
WOODS, Harold Vernon, 1st Lieut, Nashville, Tenn.

SIXTH CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Sixth Corps Area, which comprises the states of Wisconsin, Michigan and Illinois:

ANDERSON, Donald William, 1st Lieut, Oak Park, Ill, 3d Armored Force, Camp Polk, La
LERY, Abraham J, 1st Lieut, Chicago, U S Army Induction Station, Peoria, Ill
MOORE, Bert E, 1st Lieut, Danville, Ill, Headquarters and Station Complement (Corps Area Service Command), Camp Davis, N. C.
PERLMAN, Lawrence, 1st Lieut, Chicago, Induction Station, Chicago
REST, David, 1st Lieut, Chicago, Induction Station, Peoria, Ill
ROBBINS, Joseph M, 1st Lieut, Chicago, 10th Station Hospital, Camp Claiborne, La

ROSACK, Henry, 1st Lieut, Chicago, 215th General Hospital, Fort Custer, Mich
STAMLER, Maurice, 1st Lieut, Macon, Ill Headquarters and Station Complement (Corps Area Service Command), Camp Wheeler, Ga
VAN KIRK, Frank W, Jr, 1st Lieut, Chicago, Station Complement, Fort Custer, Mich
WEISBACH, Philip, 1st Lieut, Chicago, 1st Medical Squadron, Fort Bliss, Texas

Orders Revoked

BERGSTROM, Paul L, 1st Lieut, Kankland, Ill, 29th Division, Fort Meade, Md
HOLDEN, David, Lieut Col, Chicago, 182d Field Artillery, Fort Leonard Wood, Mo
KLIEGER, Samuel, 1st Lieut, Augusta, Mont, 33d Division, Camp Forrest, Tenn

EIGHTH CORPS AREA

The following additional medical reserve corps officers have been ordered to active duty by the Commanding General, Eighth Corps Area, which comprises the states of Colorado, Arizona, New Mexico, Oklahoma and Texas:

ALBERT, Mayo William, 1st Lieut, Houston, Texas, 37th Engineer Regiment, Camp Bowie, Texas
ARMSTRONG, John William, 1st Lieut, Houston, Texas, 45th Division, Camp Barkeley, Texas
BEELER, George W, 1st Lieut, Texas City, Texas, Station Hospital, Fort Sill, Okla
BLAIR, Drury Shelton, 1st Lieut, Dallas, Texas, Station Hospital, Fort Sam Houston, Texas
BLOOM, Manuel Gordon, 1st Lieut, Houston, Texas, Station Hospital, Fort Bliss, Texas
BOGUSKIE, William M, Captain, Hearne, Texas, Station Hospital, Fort Sill, Okla
BOHMFAK, Stanley Wilbur, 1st Lieut, Wichita Falls, Texas, Station Hospital, Fort Huachuca, Ariz
BRADEN, Albert Henry, Jr, 1st Lieut, Houston, Texas, 45th Division, Camp Barkeley, Texas
BURNETT, Berry H, Lieut Col, Englewood, Colo, Station Hospital, Fort Sam Houston, Texas
COLVERT, James R, 1st Lieut, Oklahoma City, Station Hospital, Fort Sill, Okla
COWAN, William Kenneth, 1st Lieut, Dallas, Texas, Station Hospital, Fort Sill, Okla
DEBACKER, William, 1st Lieut, Boulder, Colo, Station Hospital, Fort Bliss, Texas
De MEULES, Edgar A, 1st Lieut, Tulsa, Okla, Station Hospital, Fort Bliss, Texas
DODSON, George Edward, 1st Lieut, Muskogee, Okla, 45th Division, Camp Barkeley, Texas
DOYLE, William Henry, Captain, Muskogee, Okla, Station Hospital, Fort Sill, Okla
DRANE, Hugh A, Jr, 1st Lieut, Corsicana, Texas, Corps Area Service Command, Camp Wolters, Texas
FOWLER, Freeman D, 1st Lieut, Idaho Springs, Colo, 83d Field Artillery Battalion, Fort Sill, Okla
FRIED, Bernard H, 1st Lieut, San Antonio, Texas, 55th Medical Battalion, Fort Sam Houston, Texas
GARCIA, Robert E, 1st Lieut, Parker, Ariz, 36th Division, Camp Bowie, Texas
HALL, Jos Leslie, 1st Lieut, Stanton, Texas, Station Hospital, Fort Bliss, Texas

HAMRA, Henry M, 1st Lieut, Phillips, Texas, Station Hospital, Fort Sill, Okla
HARRIS, Joseph B, 1st Lieut, Midlothian, Texas, Station Hospital, Fort Sill, Okla
HILL, Robert M, 1st Lieut, Kingsville, Texas, Reception Center, Camp Wolters, Texas
HIXSON, William Cooper, 1st Lieut, Galveston, Texas, Station Hospital, Fort Crockett, Texas
HODGES, Tom Wiley, 1st Lieut, Boston, Station Hospital, Fort Bliss, Texas
HUNT, Walter Emmett, 1st Lieut, Graham, Texas, Hicks Field, Texas
KING, Walter Blackburn, Jr, 1st Lieut, Waco, Texas, 46th Engineer Regiment, Camp Bowie, Texas
McCOLLUM, Wiley Thomas, 1st Lieut, Wagon, Okla, Station Hospital, Camp Wolters, Texas
MERRIMAN, George J, Jr, 1st Lieut, Dallas, Texas, Station Hospital, Brooks Field, Texas
MERRITT, William Henry, 1st Lieut, Denver, Station Hospital, Fort Sam Houston, Texas
MITCHELL, Joseph Neal, 1st Lieut, Dallas, Texas, Station Hospital, Fort Sill, Okla
MOONEY, Ken, 1st Lieut, Dallas, Texas, Station Hospital, Fort Sam Houston, Texas
MUSMAN, David Jack, 1st Lieut, Denver, Station Hospital, Fort Bliss, Texas
PICKETT, Taylor Thomas, Captain, Garland, Texas, Camp Wolters, Texas
ROBINSON, Hampton C, Jr, 1st Lieut, Missouri City, Texas, Corps Area Service Command, Fort Sam Houston, Texas
ROOSTH, Harold, 1st Lieut, Tyler, Texas, 349th Field Artillery, Fort Sill, Okla
RUTHERFORD, Vester M, 1st Lieut, Woodward, Okla, 25th Infantry, Fort Huachuca, Ariz
SCHENCK, Charles P, Major, Fort Worth, Texas, Selective Service System, Santa Fe, N M
SCOTT, Raymond E, Lieut Colonel, San Antonio, Texas, Station Hospital, Fort Bliss, Texas
SMITH, William L, 1st Lieut, Sonora, Texas, 1st Cavalry Division, Fort Bliss, Texas
SORRY, Crysup, 1st Lieut, Freer, Texas, District Recruiting Office, U S Army, Oklahoma City
SPARK, Milton, 1st Lieut, Waco, Texas, Fort Bliss, Texas
STOVALL, Sidney LaVerne, 1st Lieut, Dallas, Texas, Station Hospital, Fort Sam Houston, Texas
WELLS, Benjamin S, 1st Lieut, Denver, Station Hospital, Fort Bliss, Texas
WILLIAMSON, Lawrence M, 1st Lieut, Lindsay, Okla, Station Hospital, Fort Sill, Okla

Orders Revoked

ADLER, Stuart W, 1st Lieut, Albuquerque, N M
BATE, Thomas H, 1st Lieut, Phoenix, Ariz
BEEBE, Milton, 1st Lieut, Fort Sam Houston, Texas
BOGUSKIE, William M, Captain, Hearne, Texas
BOURLAND, John Bookhout, 1st Lieut, Dallas, Texas
BROWN, Alex, 1st Lieut, El Paso, Texas
CAMPBELL, Robert P, 1st Lieut, San Antonio, Texas
DANIEL, Alfred H, 1st Lieut, Brownfield, Texas
De MEULES, Edgar A, 1st Lieut, Tulsa, Okla
FARNLESS, O Joecevious, 1st Lieut, Tucson, Ariz
FEAMSTER, Felix C, 1st Lieut, Fort Sam Houston, Texas
FOWLER, Freeman D, 1st Lieut, Idaho Springs, Colo
FRANCIS, James D, 1st Lieut, Tucson, Ariz
GAULT, William H, 1st Lieut, Phoenix, Ariz
GLATHAR, Albert W, 1st Lieut, Pueblo, Colo
HOLLIS, Ivan E, 1st Lieut, Halls, Okla
HUGGINS, James R, 1st Lieut, Oklahoma City
JACKSON, James E, 1st Lieut, Houston, Texas
KEHAM, Seth W, 1st Lieut, Midland, Texas
KELLY, Marcus G, 1st Lieut, Phoenix, Ariz
KENNEDY, Thomas P, 1st Lieut, Houston, Texas
KULANDAI, Fred D, 1st Lieut, Eaton, Colo
McCARTY, David W, Jr, 1st Lieut, Longmont, Colo

McCLURE, Wayne H, 1st Lieut, Kermit, Texas
McMULLEN, James W, Major, Colorado Springs, Colo
MARTIN, John D, 1st Lieut, Clint, Texas
MILBURN, Kennedy A, Captain, San Antonio, Texas
MILLIGAN, Gatewood C, 1st Lieut, Englewood, Colo
NESTER, Charles R, 1st Lieut, Houston, Texas
PICKETT, Britton E, Jr, 1st Lieut, Carrizo Springs, Texas
PITT, Charles Kermit, 1st Lieut, Denver
POWELL, Paul H, Captain, Waco, Texas
PROSSER, Moorman P, 1st Lieut, Norman, Okla
REAGAN, Tom B, 1st Lieut, Beeville, Texas
ROBERTS, Aaron L, Lieut Colonel, Fort Worth, Texas
RUTHERFORD, Vester M, 1st Lieut, Woodward, Okla
SCHENCK, Charles P, Major, Fort Worth, Texas
SCHILLER, Nelson L, Captain, Brenham, Texas
SCHUBERT, Herbert A, 1st Lieut, Washington, D C
von POHLE, Charles I, 1st Lieut, Chandler, Ariz
WELLS, Benjamin S, 1st Lieut, Denver
WHEELER, Frank B, Jr, 1st Lieut, Waco, Texas
WILKOFF, Myron, 1st Lieut, Denver
WOODALL, Jack M, 1st Lieut, Big Spring, Texas
WOODSON, Orville M, 1st Lieut, Pecos, Texas

NINTH CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Ninth Corps Area, which comprises the states of Washington, Montana, Oregon, Nevada, Utah, California and Idaho:

ARONS, Joseph J, 1st Lieut, San Francisco, Camp Grant, Ill
ASHER, Leonard M, 1st Lieut, Los Angeles, Fort MacArthur, Calif
BERG John A, 1st Lieut, Sacramento, Calif, Fort Ord, Calif
BERGER, Melvin M, 1st Lieut, Los Angeles, Camp Grant, Ill
BRACKL, Carl A, 1st Lieut, Seattle, Wash, Camp San Luis Obispo, Calif
BROTHERS, Ridgway H, 1st Lieut, Alameda, Calif, Basic Flying School, Tulare, Calif
BULLOCK, Weldon K, 1st Lieut, Vernal, Utah, 1st Medical Regiment, Fort Ord, Calif
BURG, Fred A, 1st Lieut, Fresno, Calif, Camp San Luis Obispo, Calif
BURNS, George C, 1st Lieut, Compton, Calif, Fort MacArthur, Calif
CADRANEL, Joseph L, 1st Lieut, Los Angeles, Medical Replacement Training Center, Camp Grant, Ill
CHARLOCK, Abraham, 1st Lieut, San Francisco, Camp San Luis Obispo, Calif
CHIAPELLA, Karl J, 1st Lieut, Chico, Calif, 3d Division, Fort Lewis, Wash
CHINN, Silas, 1st Lieut, San Francisco, Camp Grant, Ill
CHURCH, Claude H, Lieut Col, Berkeley, Calif, 1st Military Area, Presidio of San Francisco
COMBS, Robert C, 1st Lieut, San Francisco, Camp Sibert, Nev
CREED, James W, 1st Lieut, Filer, Idaho, Fort Ord, Calif
CROOKSTON, Wayne G, 1st Lieut, Salt Lake City, 9th Army Corps, Fort Lewis, Wash
DARNELL, Clarence A, Captain, Hollywood, Calif, Camp Haan, Calif
DEMAKOPOULOS, Nick, 1st Lieut, Stockton, Calif, Medical Replacement Training Center, Camp Grant, Ill
FEDER, Bernard H, 1st Lieut, Los Angeles, Camp San Luis Obispo, Calif
FINERMAN, Wilmore B, 1st Lieut, Los Angeles, Camp San Luis Obispo, Calif
FIRPO, John J, 1st Lieut, San Francisco, Seventh Division, Fort Ord, Calif
GALGANI, John V, 1st Lieut, San Francisco, Camp Grant, Ill
GLUKTIELD, Jerome P, 1st Lieut, San Francisco, Fort Worden, Wash
GOLDSTEIN, Louis B, 1st Lieut, San Francisco, 1st Medical Regiment, Fort Ord, Calif
GREENHOOD, Herbert, 1st Lieut, Oakland, Calif, Medical Replacement Training Center, Camp Grant, Ill
HIGUCHI, James J, 1st Lieut, San Jose, Calif, Camp Grant, Ill
HILL, Robert J, 1st Lieut, Whitehall, Mont, 40th Field Artillery, Camp Roberts, Calif
KEY, Jules M, 1st Lieut, San Francisco, Medical Replacement Training Center, Camp Grant, Ill

ARMOUR, Paul S, 1st Lieut
AUTARD, Eugene J, 1st Lieut, Presidio of Monterey, Calif
BLANKSTEIN, Samuel S, 1st Lieut, Milwaukee
BOLTON, Leslie, T, Lieut Col, Camp Roberts, Calif
BRYANT, Frank A M, Captain
CLARK, Albert Guernsey, Major, San Francisco
DIXON, Edward F, Captain, Camp Roberts, Calif
FREDRICKSON, Clyde H, Lieut Colonel
GRAHAM, George Albert, 1st Lieut, Brooklyn
GREENBERG, Irving Lawrence, 1st Lieut, Atlanta, Ga
HANSEN, Alex Frederick, 1st Lieut
MALIA, John G, 1st Lieut
MANNING, John Joseph, 1st Lieut, Chicago
MURPHY, Charles F, 1st Lieut, Camp San Luis Obispo, Calif

Relieved from Active Duty

NAUGLE, John Edward, 1st Lieut, Denver
NETHERY, Robert D, 1st Lieut
NEWMAN, Ernest Boris, 1st Lieut, Brooklyn
NIELSON, Kenneth A, 1st Lieut, Camp Roberts, Calif
NUTTER, Phosr David, 1st Lieut, Russellville, W Va
PERELSON, Harold N, 1st Lieut, Camp Callan, Calif
PLATT, Samuel Sidney, 1st Lieut, Chicago
PORTER, Reno Russell, 1st Lieut, Brookline, Mass
REIERSON, Peter Albert, 1st Lieut, Chicago
ROSENBLUM, David, 1st Lieut, Fort Rosecrans, Calif
ROYCE, Owen Bernard, 1st Lieut, Oklahoma City
SLOAN, Leonard N, Major
WHITE, Thomas Robert, 1st Lieut, Redland, Calif
WHITE, William Luther, 1st Lieut, Philadelphia

Orders Revoked

TRUMP, Frank Austin, Captain, Ottawa, Kan

NATIONAL GUARD OFFICERS RELIEVED FROM ACTIVE DUTY

APPEL, James Ziegler, Captain, Lancaster, Pa
ARCHER, Charles Andrew, Jr, 1st Lieut, Hodge, La
BRETHOUWER, Norman Avery, Captain, Montrose, Colo
CONNER, John Dutton, 1st Lieut, Nevada, Iowa
DAHL, Harry Waldemar, Lieut Col, Des Moines, Iowa
FUNKE, Alvin Herman, Captain, Ashley, Pa
GARBER, Jared Young, Captain, Lake Charles, La
GLASSMAN, Edward Lewin, 1st Lieut, Baltimore
HAUCK, Samuel Melvin, Captain, Lancaster, Pa
LONG, Michael Richard, Captain, Lawrenceville, Pa

MANDRACCHIA, John LePetrus, Major, New York
MERENBLOOM, Derbert S, Captain, Cumberland, Ky
MEYERS, Henry Albert, Major, Davenport, Iowa
PASTOR, Louis Mordecai, Lieut Col, Philadelphia
PATTON, Samuel Ellsworth, Captain, Macon, Ga
POPKY, Herman Bernard, 1st Lieut, Wilkes Barre, Pa
PREUSS, Charles August, Major, Santa Barbara, Calif
TOWBIN, Samuel, Major, Denver
WATT, Terrence Neil, 1st Lieut, Austin, Texas
WHITING, Quinn A, 1st Lieut, East Ely, Nev

ORDERED TO FOREIGN DUTY

ASHTON, Paul Louis, 1st Lieut, Coronado, Calif, San Francisco Fort William McKinley, Philippine Islands
BERNASCONI, Ezio Joseph, Captain, Providence, R I, Station Hospital, Boringen Field, Puerto Rico
FLEMING, Forest Elroy, Major, Los Angeles, Panama Canal Department, Quarry Heights, Balboa Heights Canal Zone

GAHN, Irvin George, 1st Lieut, Schofield Barracks, Hawaii, Fort Shafter, Hawaii, Wheeler Field, Schofield Barracks, Honolulu, Hawaii
GOOD, Wealthy William, 1st Lieut, Station Hospital, 11th Medical Regiment, Schofield Barracks, Honolulu, Hawaii
OPSAHL, Harold E, Captain, Brainerd, Minn, Station Hospital, Fort Amador, Balboa, Canal Zone

ORGANIZATION SECTION

OFFICIAL NOTES

EXHIBITS FROM HEADQUARTERS

- September 1-4—Tri State Fair, Parsons, Kan (in cooperation with Labette County Medical Society)
Mechanical Nostrums
- September 1-5—American Congress of Physical Therapy, Washington, D C (annual meeting)
Radio Interference
- September 2-4—Rocky Mountain Medical Conference, Yellowstone National Park, Wyo (third biennial)
The Doctor's Office
Silicosis
- September 10—Tongue River Hospital, Lame Deer, Mont (U S Indian Service, U S Department of the Interior)
Tularemia
- September 10-12—State Medical Society of Wisconsin, Madison (annual meeting)
Tularemia Pathology
Chemistry of the Sulfonamides
Industrial Health
Cutaneous Manifestations of Tuberculosis
- September 8-13—Store Window Displays, Madison, Wis (in cooperation with the State Medical Society of Wisconsin)
Information About Health
Your Personal Health
Heroes of Medicine
A Pump Representing Normal Arteries and Hard Arteries
- September 15-19—American Hospital Association, Atlantic City, N J (annual meeting)
Hospital Material
- September 16-18—Michigan State Medical Society, Grand Rapids (annual meeting)
Barbiturates
- September 22-27—Walker County Fair, Jasper, Ala (in cooperation with Walker County Medical Society)
Mechanical Nostrums
Prevention of Eye Injuries

September 23-25—Indiana State Medical Association, Indianapolis (annual meeting)

Chemistry of the Sulfonamides

September 29 October 2—Kentucky State Medical Association, Louisville (annual meeting)

Barbiturates
Nutritionally Improved Flour
Posture
Silicosis
Cutaneous Manifestations of Syphilis

ADDRESSES BY THE PRESIDENT AND THE PRESIDENT-ELECT

Dr Frank H Lahey, President of the American Medical Association, has been scheduled to deliver the following addresses during September

September 2—Rocky Mountain Medical Conference, Yellowstone National Park

September 3-4—Idaho State Medical Association, Boise

September 5—Oregon State Medical Society, Portland

September 18—Connecticut Clinical Congress, New Haven

September 30—Kentucky State Medical Association, Louisville

Dr Fred W Rankin, President-Elect of the American Medical Association, has been scheduled to deliver the following addresses

September 11—L & N Railway Surgeons, Lexington, Ky

September 24—Indiana State Medical Association, Indianapolis

September 29—Kentucky State Medical Association, Louisville

MEDICAL ECONOMIC ABSTRACTS

SCHOOL HYGIENE AND PHYSICAL EDUCATION

Children have shared with the general population in improved health conditions during the past fifty years according to a recent report of the Federal Security agency of the United States Office of Education¹. Not only has there "been a decided increase in height and weight of children of school age and of college students" during this period, but the death rate shows a remarkable decrease

From 1868 to 1890 the death rates of children of school age (in Massachusetts) remained at about 8 per thousand between 5 and 9 years, about 3.8 between 10 and 14 years and around 6 between 15 and 19. Since then there has been a steady decline of mortality to about 1.7 for the first group, 1.4 for the second and 1.8 for the third

In part this is due to sanitation and general improvement of environmental conditions although a previous study of this department showed that colleges and universities are more backward than public schools 'in putting into practice what is known in this field'. One of the weakest phases of school health care is education in hygiene which is seldom given by specially trained teachers and 'often falls below what might have been expected in content and method'

The effort to find some sort of measurements or tests by which to determine physical condition seems to have failed, because 'always in such examinations the investigator is confronted with the extreme complexity of the human organism and with many other factors that must be taken into account'

Attempts to determine the results of health examinations and services to treat defects found meet with the same obstacle of individual differences, although recent statistics indicate that tuberculous infection is becoming less common. There is beginning to be some doubt as to whether wholesale provision of glasses is "always a blessing or at least an unmixed good"

There seems to be a tendency to vest the administration of school health services in educational authorities rather in health departments. "When it comes to the treatment of defects and diseases of children, the role of the school is not so clear, for it has never been its function to deal with the treatment of bodily ills"

FEWER DEATHS FROM APPENDICITIS AND SMALLPOX

The decline in mortality from appendicitis among those insured in the industrial department of the Metropolitan Life Insurance Company of 29.1 per cent for white males and 36.4 per cent for white females between 1929-1931 and 1938-1940 is credited to the fact that "The challenge of appendicitis has been met by educational campaigns in which were joined the efforts of the medical profession, life insurance companies, schools, civic organizations and druggists". It is held that this decline in the death rate is due to 'two vital factors—prompt medical attention and avoidance of laxatives in the presence of abdominal pains'

The same issue of the Statistical Bulletin of the Metropolitan Life Insurance Company (June 1941) notes that there were only 2,839 reported cases of smallpox in 1940, which represents a

¹ Rogers, James F. School Hygiene and Physical Education, Biennial Survey of Education in the United States 1939-1940, United States Printing Office 1941

drop of more than 70 per cent from the previous year. In a group of states on the Atlantic seaboard containing one fourth of our total population there was not a single case, while the large majority of the cases were concentrated in the North Central area and some of the Western states, where a large number of people minimize or ignore the efficacy of vaccination.

DOCTOR'S AUTOMOBILE

In a profession that is no respecter of time tables, says *Automobile Facts*, the physician's car is just about as much a part of his professional equipment as his stethoscope or his thermometer.

Because the hurry call to a patient's home may come at noon, midnight or dawn, the doctor must keep his medical kit ready and his car on hand twenty-four hours a day.

As a result, the medical man leads all occupational groups in the number of round trips rolled up annually.

His speedometer also ticks off more total miles in the course of a year than any other group, with the sole exception of traveling salesmen.

Residents of rural areas, who had been far from a doctor's service in the horse and buggy days, are especially aided.

Out of every 100 doctors who use their private automobiles for necessity transportation, it was found that:

Sixteen average more than 1,500 trips annually.

Fifteen make from 1,000 to 1,500 trips a year.

Ten reported from 800 to 1,000 round trips by car annually.

Twenty-eight range from 400 to 800 trips annually.

Twenty-two average from 200 to 400.

Only nine average fewer than 200 round trips a year for necessity driving.

For all car-owning physicians, the average number of round trips annually per car was found to be 947, of which 842 trips, or nearly 90 per cent of the total, were credited to necessity purposes.

Naturally, the length of the trips varies from a few blocks to many miles, depending on the doctor's location and the range of his practice.

Of all groups of car users, the doctors' cars rank next to the top, their average distance traveled in a year being 12,932 miles per car. And, according to surveys, necessity driving accounted for 8,640 miles of the total.

WOMAN'S AUXILIARY

Louisiana

The wives of the Ascension Parish doctors were invited to a "Coffee" given by Mrs. Rhodes Spedale of Plaquemine in honor of Mrs. Roy Carl Young, president of the Woman's Auxiliary to the Louisiana State Medical Society. Mrs. S. T. Martin suggested that Ascension Parish organize while Mrs. Young was present. Mrs. Young outlined aims and purposes of the auxiliary and procedure of organization followed. Mrs. D. T. Martin of Donaldsonville was elected president; Mrs. Percy LeBlanc, Donaldsonville, vice president; Mrs. M. Epstein of Gonzales, secretary and treasurer.

An organization meeting for wives of doctors of Acadia Parish was held at the home of Dr. and Mrs. J. P. Mauboules in Rayne.

Mrs. Roy Carl Young of Covington, state president, came to assist with the formation of the new organization.

Utah

The Salt Lake County medical auxiliary met March 17. Dr. Richard P. Middleton, president of the Salt Lake County Medical Society, spoke on the bills pertaining to medical practice which came before the state legislature this year. Mrs. Claude L. Shields talked on roses, Mrs. J. L. Jones on lily pools and Mrs. John Sugden on "New Faces in the Garden."

Virginia

The auxiliary to the Norfolk County Medical Society on March 25 decided to contribute \$50 to the Norfolk Tumor and Cancer Control Clinic and to transfer to the treasury of the Tidewater Memorial Hospital \$50 to be used for the next patient in the auxiliary bed. The auxiliary is helping with the Woman's Field Army Cancer Control drive with Mrs. Southgate Leigh Jr. as chairman. Mrs. C. J. Devine was appointed chairman for the Community Fund drive among the doctors. A short story on the doctor's wife was read by Mrs. C. M. McCoy. There was a luncheon in honor of Mrs. Griffin W. Holland, president of the state auxiliary. "Doctors' Day" was celebrated by presenting to the Norfolk County Medical Society a projector for use in showing slides at the medical meetings. During luncheon, a short fashion show was given with the doctors' wives acting as models.

The Woman's Auxiliary to the Northampton-Accomac Medical Society met April 1 at the home of Mrs. E. W. P. Downing of Frankton. The Hygeia chairman, Mrs. C. E. Critcher, reported that this magazine had been replaced in five more Accomac schools.

The state president, Mrs. Griffin W. Holland, introduced Mrs. E. Latane Flanagan, Richmond, president-elect of the

state auxiliary, who spoke on "This Job of Ours." Following an election of delegates to the state meeting, there was an auction of foods for general funds.

Washington

Mrs. J. T. Rooks, radio chairman of the Walla Walla Valley auxiliary, has for the past two years organized radio health programs which are chosen in August from a list sent from the American Medical Association and are selected to cover the health needs of the community. Station KJW in Walla Walla broadcasts these programs Tuesdays from August until May. These programs last year were declared one of the most popular broadcasts of KJW.

West Virginia

The auxiliary to the McDowell County Medical Society met at the Appalachian Community Room, Welch. Mrs. Charles B. Chapman, the president, introduced Mrs. Chester Harman, who discussed Red Cross work. The auxiliary donated \$10 to the Red Cross and Salvation Army canteen, \$1 to the Janc Todd Memorial Fund and decided to send *Hygeia* to the Junior Woman's Club Library.

The Woman's Auxiliary to the Academy of Medicine of Parkersburg met at the Chancellor Hotel. Mrs. H. A. Giltner called the meeting to order. Mrs. V. E. Holcombe, then national auxiliary president, talked on *Hygeia* and the *Bulletin*.

Wisconsin

The Columbia-Marquette-Adams County auxiliary in Portage March 18 arranged to send a crippled child to "Wabeek," Wisconsin Dells, for two weeks this summer. Mrs. R. B. Dryer entertained the 22 members with a review of "Doc's Wife" by Faye Cosholt Lewis. Hostesses were the Sisters of St. Saviours Hospital.

The Fond du Lac County auxiliary in March planned parties to raise money for the Girl Scout Troop which the auxiliary sponsors. A musical program was presented by 4 members of the auxiliary: Mrs. L. J. Keenan, vocalist; Mrs. E. V. Smith Jr., violinist, and Mrs. S. A. Thiesen, accompanist. Mrs. E. L. Watson of Ripon presented a paper on "The Bible in Modern Literature." At their meeting in Fond du Lac in April, 29 members heard Miss Ruth E. Reber, dean of women and director of speech at Wayland Academy and Junior College at Beaver Dam, read "Life with Father."

A tea was held in LaCrosse in March by the LaCrosse County auxiliary, honoring Mrs. S. A. Montgomery, who left with her husband for Fort Sam Houston, Texas, in April. Mrs. Montgomery was the auxiliary's first president and one of its organizers and is now second vice president of the state organization.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Club Members Oppose Compulsory Sickness Insurance.—Members of the Commonwealth Club of California voted opposition to the "establishment by government of a system of compulsory sickness insurance" in a membership poll completed July 29, a release from San Francisco announces. To the question "Do you favor the establishment by government of a system of compulsory sickness insurance (health insurance)?" 871 members voted "No" and 491 members voted "Yes." Ballots on this question were mailed to all of the club's 4,400 members following a study by the public health section and publication of reports for and against the issue.

Well Baby Program.—The University of California Medical School, San Francisco, and the state department of health are cooperating in the expansion of child health work in the state. A step in the plan was the appointment of Dr. Sydney Sinclair, formerly instructor in pediatrics, Yale University School of Medicine, New Haven, as associate in pediatrics at California. Dr. Sinclair will spend part of his time teaching at the university and in addition he will be a pediatric "circuit rider," traveling over California as an agent of the state health department. He will act as a consultant for county medical societies, individual physicians and groups involved in the care of young children. The new plan is an extension of the post-graduate "well baby program" started more than a year ago, which is under the direction of Dr. Amos Christie, associate professor of pediatrics in the medical school.

Position Open as City Health Officer.—The city of Los Angeles is seeking qualified applicants for the position of city health officer paying a salary of \$7,200 per annum. While the city charter requires that candidates for this position be residents of Los Angeles if possible, candidates who do not reside in the city may become eligible, provided they are otherwise qualified, if there is insufficient competition for this examination. From the experience of other agencies in this area it is probable that competition will be insufficient and that it will be necessary to waive the residence requirements. The city health officer is the chief administrative officer of the city health department and plans and administers a broad public health program, including medical and inspectional services. He is responsible for the proper enforcement of health laws and ordinances and the prevention and control of communicable disease in the city. Public health physicians who are interested in this position should communicate with the Los Angeles City Civil Service Commission, Room 11, City Hall, Los Angeles, for further information.

DISTRICT OF COLUMBIA

Citizenship as Prerequisite to Practice of Medicine.—The Medical Society of the District of Columbia has approved a proposed bill which would make American citizenship a prerequisite to the practice of medicine in the District. At present aliens are permitted to qualify for licenses to practice medicine in the District. Forty-four states have laws or regulations requiring medical applicants to be American citizens or holders of first naturalization papers. Exceptions are California, Indiana, Vermont and Arizona.

ILLINOIS

Personal.—Dr. Henry B. Knowles, until recently acting managing officer of the Anna State Hospital, Anna, has been named to a similar position at the Illinois Training School for Boys, St. Charles. —Dr. Charles O. Highsmith, West Union, has been appointed a member of the Professional Committee for Medicine of the State Department of Registration and Education, filling a vacancy caused by the death of Dr. John R. Neal, Chicago, it is reported.

Three Amebiasis Carriers at State Fair.—Three food handlers at the recent state fair in Springfield were found to be amebic dysentery carriers and were relieved of their employment, August 12. The discovery was made following the report of a Springfield physician to the state department of health that he had diagnosed the illness of a patient from one

of the traveling shows as amebic dysentery. The state department then took specimens from all crew members of the show, a group of about sixty persons, who had been in close contact with the patient. The three persons whose specimens were positive for the presence of the amebic dysentery organism were immediately removed from the state fair grounds. The patient's work involved the handling of refreshments either for the show crew or for the public.

Chicago

Wisconsin and Chicago Cooperate in Symposium.—The University of Wisconsin and the University of Chicago are cooperating in a joint symposium on the respiratory enzymes and the biologic action of the vitamins. The Wisconsin sessions, devoted to the respiratory enzymes, will be held September 11-13 and the meetings dealing with the vitamins will take place in Chicago, September 15-17. The symposium is sponsored jointly by the two universities with funds supplied by the Wisconsin Alumni Research Foundation and is the fifth held at Wisconsin and supported by the foundation during the past three years. At the Wisconsin sessions the speakers will include Dr. Otto Meyerhof, research professor of physiologic chemistry, University of Pennsylvania School of Medicine, Philadelphia, and Carl A. Neuberg, Ph.D., department of chemistry, New York University. Complete information may be obtained from Conrad A. Elvehjem, Ph.D., University of Wisconsin, Madison, or from Thorfin R. Hogness, Ph.D., University of Chicago.

INDIANA

Personal.—Dr. John D. Winebrenner, formerly of Muncie, has been made district health officer for the Indiana State Board of Health, Princeton, succeeding Dr. Wallace E. Childs, who has been assigned to active duty at Fort Knox, Ky., U. S. Army Medical Corps.

Indiana Has Vacancy for a Psychiatrist.—The Indiana State Personnel Division has announced examinations for senior clinical psychiatrist and psychiatric social worker to fill anticipated vacancies in the state department of public welfare. The deadline for filing applications is September 9. Information may be obtained from the Indiana State Personnel Division, 141 South Meridian Street, Indianapolis.

Changes in the Faculty.—Paul M. Harmon, Ph.D., who has been connected with the Indiana University School of Medicine, Indianapolis, for the past twenty-six years, has been named chairman of the department of physiology in the medical school, succeeding William J. Moenkhaus, Ph.D., who retired at the end of the past school year. Dr. Khalil G. Wakim, who has been teaching at the Mayo Clinic, Rochester, Minn., for the last year, has been appointed associate professor of physiology.

KANSAS

Meeting on Nutrition.—Gov. Payne H. Ratner has appointed a committee on nutrition as part of the national defense program. Margaret M. Justin, Ph.D., dean of the division of home economics, Kansas State College, Manhattan, is chairman of the committee and Dr. Paul E. Belknap, Topeka, the physician member. The group plans to hold its first annual meeting in Topeka on October 17-18, at which time a program covering various aspects of nutrition will be presented.

KENTUCKY

Society News.—Dr. John E. Haynes, Dawson Springs, discussed diagnosis and treatment of varicose veins at a meeting of the Hopkins County Medical Society, July 10, in Madisonville. —Dr. Charles William Dowden, Louisville, discussed vitamin therapy at the June meeting of the Henry County Medical Society. —Dr. Francis D. Willey, Jenkins, presented a paper on burns at a meeting of the Letcher County Medical Society, Whitesburg, July 29.

LOUISIANA

New Institute for Medical Research.—The Helis Institute for Medical Research has been created by a trust fund made available by William G. Helis of New Orleans to provide funds for the conduct of medical research and the advancement of the medical sciences. The institute intends to establish various clinical and experimental divisions at medical schools and hospitals, the first of which has already been set up as the Center of Research of Hotel Dieu Hospital. All research carried on at these centers will be financed by the institute. Dr. Carlo J. Tripoli, assistant professor of medicine, Louisiana State University School of Medicine, New Orleans, has been appointed director of the institute.

MICHIGAN

State Medical Meeting in Grand Rapids.—The Michigan State Medical Society will hold its seventy-sixth annual meeting at the Pantlind Hotel and the Civic Auditorium, Grand Rapids, September 16-19, under the presidency of Dr. Paul R. Urmston, Bay City. Out of state speakers will include:

- Dr. Russell L. Cecil, New York, Arthritis—A Curable Disease.
- Dr. Elliott C. Cutler, Boston (Dr. Stanley O. Hoerr, Boston, associate in study), Acute Appendicitis—A Twenty-Five Year Study.
- Dr. Francis E. Seneac, Chicago, Serologic Aspects of Syphilis.
- Dr. George W. Kosmak, New York, The Medical and Other Implications Which Relate to An Aging Female Population.
- Dr. Lawrence Kolb, Washington, D. C., The Needs and Possibilities of Research in Mental Disease.
- Dr. Wesley Bourne, Westmont, Que., De Officiis in Anesthesia.
- Dr. Anthony J. Lanza, New York, Medical Service in Small Industries.
- Dr. Henry G. Poncher, Chicago, Hemorrhage in the Newborn.
- Dr. James R. McCord, Atlanta, Ga., Some Obstetric Opinions.
- Dr. Charles E. Lyght, Northfield, Minn., Some Educational Aspects of Diagnosing Tuberculosis Early.
- Dr. Virgil P. W. Sydenstricker, Augusta, Ga., Factors in Deficiency Disease.
- Dr. James L. Gamble, Boston, Pathogenesis of Acidosis and Alkalosis.
- Dr. Borden S. Veeder, St. Louis, Child Health in National Defense.
- Dr. William E. Caldwell, New York, Physiology and Management of the First Stage of Labor.
- Dr. Alfred Cowan, Philadelphia, Some Observations on the Use of Glasses.
- Dr. Shields Warren, Boston, Response of Tumors to Radiation.
- Dr. Chester S. Keefe, Boston, Recent Advances in Chemotherapy of Infectious Diseases.
- Dr. Arlie R. Barnes, Rochester, Minn., Problems in the Differential Diagnosis of Coronary Artery Disease.
- Dr. Harry E. Mock, Chicago, Management of Skull Fractures.
- Dr. Owen H. Wangenstein, Minneapolis, Management of Abdominal Injuries.
- Dr. Richard W. TeLinde, Baltimore, Therapy of the Estrogens.
- Dr. David E. S. Wishart, Toronto, Ont., Mistakes Made in the Diagnosis and Estimation of Deafness.
- Dr. Samuel Iglauer, Cincinnati, Acute Suppuration in the Spaces of the Neck and motion picture demonstration: Approaches to the Surgical Spaces of the Neck.
- Dr. Harold K. Faber, San Francisco, Cerebral Atrophy in Infants and Children.
- Dr. Carroll S. Wright, Philadelphia, Therapeutic Effects of Vitamin B Factors in Dermatology.
- Dr. Samuel William Becker, Chicago, Diagnosis and Treatment of Vesicular and Vesiculopustular Eruptions of the Hands and Feet.
- Dr. Charles A. Doan, Columbus, Ohio, Relationship of the Reticulo-endothelial System to Cellular and Humoral Immunity.

The program has been divided into general assemblies and sectional meetings. Friday morning there will be a symposium on traumatic surgery and a panel discussion on "Some Phases of the Cancer Problem," in which Dr. Bernard H. Nichols, Cleveland, is the guest speaker. Alphonse M. Schwitala, S.J., dean of St. Louis University School of Medicine, St. Louis, will deliver the Biddle Oration on President's Night, Wednesday evening, on "The Code of Medical Ethics." A symposium on the business side of medicine has been arranged for Tuesday, September 16. Dr. Rosco G. Leland, Chicago, will lead a round table discussion at this session. The annual conference of secretaries, Wednesday, will be addressed by Mr. John M. Pratt, executive officer, National Physicians Committee, Chicago, on "What's Going On Nationally."

MISSOURI

Annual Clinical Conference.—The nineteenth annual fall clinical conference of the Kansas City Southwest Clinical Society will be held in Kansas City, October 6-9. The tentative program lists the following guest speakers:

- Dr. Carl E. Badgley, Ann Arbor, Mich., Low Back Pain: Differential Diagnosis and Treatment of the Various Causative Factors.
- Dr. William Dock, San Francisco, The Pathologic Physiology of Albuminuria and Nephrosis.
- Dr. John W. Harris, Madison, Wis., Menopausal Bleeding: Causes and Treatment.
- Dr. Verne C. Hunt, Los Angeles, Surgical Consideration of Carcinoma of the Stomach.
- Dr. Philip C. Jeans, Iowa City, Relative Influence of Diet and Endocrine Disease in Growth.
- Dr. Sara M. Jordan, Boston, Medical Management of Peptic Ulcer.
- Dr. Samuel J. Kopetzky, New York, Treatment and Management of Otogenic Meningitis.
- Dr. Ernest Perry McCullagh, Cleveland, Clinical Use of Testicular Hormones.
- Dr. Henry O. Mertz, Indianapolis, Urinary Infections in Infants and Children.
- Dr. John T. Murphy, Toledo, Ohio, X-Ray Treatment of Cancer of the Skin.
- Dr. Fred W. Rankin, Lexington, Ky., President-Elect, American Medical Association, Diverticulitis of the Colon.
- Dr. G. Canby Robinson, Baltimore, Nervous Indigestion.
- Dr. Ernest Sachs, St. Louis, Recent Trends in the Treatment of Brain Injuries.
- Dr. Roy W. Scott, Cleveland, The Part Played by Age, Cardiac Hypertrophy and Coronary Arterial Change in Heart Failure.
- Dr. Henry P. Wagener, Rochester, Minn., The Grading and Grouping of Hypertensive Lesions in the Retina.

NEBRASKA

Postgraduate Course in Obstetrics and Pediatrics.—The University of Nebraska College of Medicine, Omaha, announces that it will conduct an extramural postgraduate course in obstetrics and pediatrics, September 8-22. The instructors will be Drs. Willis E. Brown, assistant professor of obstetrics, and John L. Gedgoud, assistant professor of pediatrics. Clinics will be held at the hospitals in the afternoon, and lectures will be presented in the evening with the exception of the program in Fremont, where only an evening meeting will be held. The dates and locations scheduled for the program are: Pender, September 8; Norfolk, September 9; Columbus, September 10; Beatrice, September 11; Falls City, September 12; Ogallala, September 15; North Platte, September 16; McCook, September 17; Kearney, September 18; York, September 19; Fremont, September 22. County and district medical societies are cooperating in the program with the state medical association, the state department of health and the university.

NEW JERSEY

Society News.—A joint meeting of the Bergen and Passaic county medical societies, September 11, in Paterson will be addressed by Drs. Charles H. Schlichter, Elizabeth, on "Medical Preparedness—the Physician's Duty in National Defense"; Norman M. Scott, Trenton, "An Analysis of the Work Done by the Physicians of the Draft Boards," and Col. Charles M. Walson, U. S. Army, "What the Army Expects of Civilian Doctors in the National Defense Program."

NEW YORK

Sulfathiazole Furnished to Physicians in New Gonorrhea Program.—The state department of health has begun the distribution of sulfathiazole to physicians, clinics and hospitals throughout upstate New York for use in the treatment of gonococcal infections, according to *Health News*. Packages of 40 tablets (0.5 Gm. each) may be obtained on request from regular laboratory supply stations which are now distributing the arsenicals and bismuth compounds for the treatment of syphilis. The questionnaire method will be used to assemble information on the incidence of gonorrhea in the state. A series of surveys are planned, the first of which was to be inaugurated this month. Physicians are urged to report to the state department of health patients who have failed to respond to treatment with sulfathiazole and who discontinue treatment before they are cured. The services of health department investigators will be made available for the return of such patients for further treatment.

New York City

Personal.—Dr. Enrique Washington Lithgow of the Hospital Padre Billini of Ciudad Trujillo, Dominican Republic, is the first physician to fill the fellowship created by the Dazian Foundation for Medical Research of New York City at the Mount Sinai Hospital for the benefit of physicians from the Latin-American republics.

Promotions at New York University.—Announcement is made by New York University College of Medicine of the following promotions:

- Dr. Milton B. Rosenbluth, to be associate professor of clinical medicine.
- Dr. Ludwig W. Eiehma, assistant professor of medicine.
- Drs. Claude E. Heaton, David N. Barrows and Arthur M. Reich, associate clinical professors of obstetrics and gynecology.
- Drs. Myron E. Goldblatt, Herman H. Lardaro, Mortimer D. Speiser and Irwin Wellen, assistant clinical professors of obstetrics and gynecology.
- Dr. Raymond E. Meek, assistant clinical professor of ophthalmology.
- Dr. Harold Jacobziner, assistant clinical professor of pediatrics.
- Dr. Lauretta Bender, associate professor of psychiatry.
- Dr. Frank J. Curran, assistant professor of psychiatry.
- Drs. Benjamin Apfelberg, Morris Herman, Sylvan Keiser, Charles B. Thompson and Herman I. Wortis, assistant clinical professors of psychiatry.
- Dr. John H. Mulholland, professor of clinical surgery.
- Dr. Samuel Standard, assistant professor of surgery.
- Dr. Francis A. Echlin, assistant professor of surgery (neurosurgery).
- Drs. Anthony S. Bogatko, Victor Carabba, Thomas J. Galvin, Meyer J. Kutisker, John A. Lawler, Joseph Nash, Irwin E. Siris and Hippolyte M. Wertheim, assistant professors of clinical surgery.

City Health Department Reorganized.—In a reorganization of the city department of health, the bureau of district health administration was discontinued, July 1, and the director transferred to the position of consultant in local administration. The major portion of the time of the consultant will be spent in the districts acting in an advisory and instructive capacity to the district health officers and assisting them in the development of programs. The former bureau of general administration is now called the office of general administration. The name of the bureau of records has been changed to the bureau of vital records and statistics. The central statistical division

has tentatively been placed under the deputy commission in charge of personnel. At present it includes only the statistical workers previously attached to the bureau of district health administration. Under the reorganization, the department of health now has the following ten bureaus: child hygiene, food and drugs, health education, laboratories, nursing, preventable diseases, sanitary bureau, social hygiene, tuberculosis, and vital records and statistics.

OHIO

Society News.—Dr. Walter M. Simpson, Dayton, will address the September meeting of the Summit County Medical Society, Akron, on "Fevers of Obscure Origin."—Dr. Richard D. Gill, Wheeling, W. Va., addressed the Guernsey County Medical Society, Cambridge, July 17, on "Obstruction of the Ureters."

OKLAHOMA

Activities of Public Health Personnel.—Dr. Lowell L. Stokes, Anadarko, health officer of the Caddo County health department, has been placed in charge of a newly created unit in Okmulgee County. Dr. Hugh H. Hawley Jr., Anadarko, is now in charge of Caddo County. Dr. William A. Loy, director of the department at Ardmore and for the past year doing graduate work in public health at Harvard University, Boston, has been assigned to Cleveland County. Physicians who have spent the last year in graduate health study and who have returned to work with the state department of health include:

Frank P. Bertram, D.D.S., Oklahoma City, director of the dental division.

Dr. Harry E. Barnes, temporarily director of the Bryan County Health Department.

Dr. Vance F. Morgan, director of the Comanche County Health Department, Lawton.

Dr. Ferdinand H. Hassler Jr., director of laboratories, state department of health.

Dr. Lloyd H. Gaston of the U. S. Public Health Service has been assigned to work in Oklahoma as part of the cooperative policy planned in defense areas, the state medical journal reports.

OREGON

New Professor of Pathology.—Dr. Warren C. Hunter, since 1935 associate professor of pathology, University of Oregon Medical School, Portland, has been promoted to a full professorship. Dr. Hunter has been connected with the school since 1921.

Division of Mental Hygiene Established.—The state board of health has established a division of mental hygiene. Dr. Curtis R. Chaffin, Portland, of the U. S. Public Health Service is aiding in the work of setting up the new division, which will cooperate with the already existing facilities for mental hygiene in the state, according to a report in *Northwest Medicine*.

Crippled Children Program Transferred to Medical School.—*Northwest Medicine* announces that the administration of the state program for crippled children has been transferred from the State Public Welfare Commission to the University of Oregon Medical School, Portland. Dr. Richard B. Dillehunt, dean of the school, will continue as medical director.

PENNSYLVANIA

State Medical Meeting in Pittsburgh.—The ninety-first annual meeting of the Medical Society of the State of Pennsylvania will be held at the Hotel William Penn, Pittsburgh, October 6-9, under the presidency of Dr. Francis F. Borzell, Philadelphia. Guest speakers will include:

Dr. Louis A. Brunsting, Rochester, Minn., Sulfonamide Drugs in Dermatology.

Dr. Samuel W. Clusen, Rochester, N. Y., Prevention and Treatment of Vitamin Deficiencies in Children.

Dr. Joseph A. Johnston, Detroit, The Physical Aspect of the Adolescent Period.

Dr. Meredith F. Campbell, New York, Urinary Obstruction in Infants and Children.

Dr. Charles A. Waters, Baltimore, Hypooperative Irradiation a Place in the Treatment of Renal Tumors?

Dr. Albert M. Snell, Rochester, Minn., Changing Conceptions of Portal Cirrhosis.

Dr. Maximilian A. Goldzieher, New York, Diagnosis and Treatment of Pituitary Disorders.

Dr. James I. Revercraft, Cleveland, Diagnosis and Treatment of Pharyngeal Pexia.

Dr. Virgil S. Counsellor, Rochester, Minn., Influence of Infection on Abdominal Hysterectomy.

Dr. Edward S. Welles, Saranac Lake, N. Y., Surgery in the Presence of Diabetes.

Dr. Ireland S. McWhittrick, Peconic, Surgery in the Presence of Diabetes.

William Arthur Lewis, selective service director, State of Pennsylvania.

Medical Choice of Selectees—From the Viewpoint of the Pennsylvania Selective Service Board.

Dr. William L. Benedict, Rochester, Minn., Surgical Treatment of Glaucoma.

Dr. Thomas C. Galloway, Evanston, Ill., Upper Respiratory Tract Obstructions and Their Secondary Effects.

Dr. Charles Gordon Heyd, New York, Common Errors in Selection of Patents for Surgery.

Dr. Edward J. Stieglitz, Garrett Park, Md., Problems of the Aging.

Dr. Charles A. Doan, Columbus, Ohio, More Common Blood Dyscrasias—Their Diagnosis and Treatment.

There will be three morning general assemblies, round table conferences featuring question and answer periods, and afternoon sectional meetings.

Philadelphia

Personal.—Dr. William G. Leaman Jr. has been appointed clinical associate professor of medicine at the Woman's Medical College of Pennsylvania and visiting physician at the Philadelphia General Hospital. In the latter position he succeeds the late Dr. Robert G. Torrey.

RHODE ISLAND

Fiske Prize Essay.—"Chemotherapy—Its Clinical Application" has been chosen as the subject for the Fiske Fund prize essay for 1942, it was announced at the recent annual meeting of the Rhode Island Medical Society. The author of the winning essay will receive \$250. Additional details may be obtained from Dr. Wilfred Pickles, 184 Waterman Street, Providence, secretary to the trustees of the Fiske Fund.

TENNESSEE

National Youth Health Program.—The nationwide health project of the National Youth Administration for youths aged 17 to 25 years who are enrolled in the out of school work program is being organized in Tennessee. Examining physicians and dentists will be appointed in each county to secure examinations of the youths. For this service the administration will pay for office examinations. Dr. John M. Lee, Nashville, has been appointed state health director to organize and direct the program in Tennessee. The state administrator of the NYA has appointed the following to act as a medical advisory committee: Drs. Harrison H. Shoulders, chairman, Charles M. Hamilton, Leonard W. Edwards, Wilson Carter Williams and Dr. Lee. All are from Nashville.

TEXAS

Executive Director for Group Hospital Service.—Walter R. McBee, executive director of Group Hospital Service of Oklahoma, has been appointed to a similar position with the state group in Texas. He was admitted to the Missouri bar in 1924. He has worked with the Federal Board for Vocational Education and the U. S. Veterans' Bureau, the American Credit Indemnity Company, and the Group Hospital Service of St. Louis.

Society News.—Drs. Charles T. Kennedy and Joseph D. Becton, Greenville, addressed the Hunt-Rockwall-Rams Counties Medical Society in Wolfe City, August 12, on typhoid and on abdominal surgery, respectively. Dr. George B. Stephenson, Beaumont, addressed the Jefferson County Medical Society in Beaumont July 14, on "Low Back Pain."—At a meeting of the Hidalgo Starr Counties Medical Society in Edinburg recently the speakers were Drs. Edith M. Bonnet on "Significance of Tuberculin Testing in Childhood" and Roy G. Giles "An Evaluation of the X-Ray in the Diagnosis of Pulmonary Tuberculosis", both are of San Antonio.

Changes in Health Officers.—Dr. Harold C. Shilling, Fort Worth, has been made director of the Hunt County health unit replacing Dr. Henry C. Wilson, Greenville, who has been appointed to the Tyler-Smith counties health unit. Dr. Wilson succeeds Dr. Robert L. Cherry, Tyler, who has been appointed field director for the county health units for the state department of health. Dr. John H. Finn, Refugio, was recently appointed health officer of Refugio County, succeeding Dr. Haddon B. Woods, who has been called to service in the army. Dr. Bennett A. Wight, Kermit, has been placed in charge of the Gregg County Health Department. Dr. Sylvester S. Munger has been named city health officer of Marlin.

WEST VIRGINIA

Society News.—Dr. Richard J. Stevens, Huntington, addressed the Logan County Medical Society, Logan, recently on "Hemorrhages in the Gastrointestinal Tract."—Dr. Walter B. Martin, Norfolk, Va., addressed the Mercer County Medical Society, Tazewell, recently, on "Cardiac Decompensation."—Sidney S. Negus, Ph.D., Richmond, Va., addressed a recent meeting of the Fayette County Medical Society and its Women's Auxiliary at Oak Hill on "Pseudochemistry in Medicine."

GENERAL

New Radiologic Society.—The Rocky Mountain Radiological Society was organized during the midsummer radiologic conference of the Denver Radiological Club in Denver, July 31-August 2. There are forty-two charter members. Officers include Drs. Leonard G. Crosby, Denver, president, and Alfred M. Popma, Boise, Idaho, secretary. The 1942 annual meeting will be in Denver.

Gold Watch Found.—A letter received from the editor of the Plainfield, N. J., *Courier-News* indicates that a gold watch was found recently in the stomach of a weakfish which was opened in an A. & P. store in that city. The watch bore the following inscription: "Jim Cook, A. M. A." The New Jersey authorities are interested in determining whether or not this related to any one associated with the American Medical Association.

The Poliomyelitis Situation.—The opening of schools in Pennsylvania has been postponed on account of the spread of poliomyelitis. Up to August 29 eighteen deaths had been reported and more than 250 cases were confined to the eleven eastern and central counties in the state. The occurrence of three new cases in Philadelphia and eight in other counties led to additional restrictions, it was stated. Newspapers reported, August 31, that more than 60 cases had occurred in Passaic and Bergen counties, N. J., in the preceding two months. Two deaths in the Bergen Pines Isolation Hospital on August 24 were ascribed to the disease. In the previous twenty-five days 11 cases of the disease and one death were reported in the Paterson City Hospital. Opening of schools has been postponed in Passaic County and in Hackensack and Ridgewood in Bergen County. In Illinois the number of cases was 133, August 26, as against a total of 62 up to the same date in 1940.

International College of Surgeons.—Dr. Desiderio Roman, Philadelphia, was named president-elect of the International College of Surgeons at the international assembly in Mexico City, August 16, and Dr. Fred H. Albce, New York, was inducted into the presidency. Vice presidents are Drs. Chevalier L. Jackson, Philadelphia; Manuel A. Manzanilla, Mexico City; Herman de Las Casas, Caracas, Venezuela; Alex Stanischew, Sofia, Bulgaria, and A. M. Dogliotti, Catania, Italy. Dr. Max Thorek, Chicago, is the international executive secretary. Dr. Thomas A. Shallow, Philadelphia, was chosen president of the U. S. chapter; Drs. Raymond W. McNeely, Chicago, and James R. Jaeger, vice presidents; Benjamin I. Golden, Elkins, W. Va., treasurer; Charles H. Arnold, Lincoln, Neb., executive secretary, and George H. Gillen, Denver, secretary of the scientific assembly.

National Safety Congress.—The thirtieth National Safety Congress and Exposition will be held at the Stevens Hotel, Chicago, October 6-10. One session, Tuesday morning, on industrial health will be addressed by Dr. Clarence D. Selby, medical consultant, General Motors Corporation, Detroit, on "National Defense Brings an Improved Industrial Hygiene Program"; Dr. John J. Brandabur, assistant supervising surgeon, Chesapeake & Ohio Railway Company, Huntington, W. Va., "Effective Industrial Health Education," and Myron A. Snell, supervising engineer, Hartford Accident & Indemnity Company, Hartford, Conn., "Essentials of Healthful Industrial Environment." Included among the speakers at the all day session on industrial nursing will be Dr. Henry H. Kessler, medical director, New Jersey Rehabilitation Clinic, Newark, on "Community Resources of the Industrial Nurse" and Dr. Paul A. Brehm, supervisor, industrial hygiene division, Wisconsin State Board of Health, Madison, "What the Nurse Can Do to Combat Absenteeism Caused by Illness and Injury."

Southern Tuberculosis Conference.—The North Carolina Tuberculosis Association will be host to the Southern Tuberculosis Conference in Asheville, N. C., September 15-17, at the George Vanderbilt Hotel, Dallas, Texas. At the general sessions the following will speak:

- Dr. Julian A. Moore, Asheville, Isolation of the Open Case.
- Dr. Robert J. Reeves, Durham, N. C., Laminography.
- Dr. Raymond Hussey, Baltimore, Pulmonary Tuberculosis in Industry.
- Dr. Champneys H. Holmes, Atlanta, Ga., Tuberculosis in the Aged.
- Drs. Joseph R. Blalock and James B. Funkhouser, Marion, Va., Tuberculosis in Mental Hospital.
- James P. Faulkner, Atlanta, Ga., Social Service and Occupational Readjustment for the Tuberculous.
- Dr. Reuben Alec Brown, New Orleans, Report of the Chairman of State Directors of Tuberculosis Control.

The banquet will be addressed Monday night, among others, by Drs. Henry Franklin Carman, Dallas, Texas, president of the conference, on "Rehabilitation," and Eugene L. Bishop, Chattanooga, Tenn., "The Tennessee Valley Authority as a Health Agency."

FOREIGN

Personal.—Dr. Ernest Muir, medical secretary of the British Empire Leprosy Relief Association, has gone to take charge of the Chacachacare Leper Asylum in Trinidad for eighteen months, according to the *Lancet*.—Lord Horder has been appointed personal adviser to the Minister of Food, Lord Woolton, on medical aspects of the food problem.

Research Professorship Endowed.—The Royal College of Surgeons, London, has received £40,000 from the Bernard Baron trustees to endow a Bernard Baron research professorship at the college, according to *Science*. A letter addressed to the president of the college by the trustees reads in part:

The scientific work which has formed such a notable part of the activities of the Royal College of Surgeons of England must and will continue. The trustees realize, however, that one of the essential sinews of your and their endeavor to benefit mankind is the provision of funds for the prosecution of research. They have therefore decided to make a gift of £40,000 for the endowment of a Bernard Baron research professorship at the Royal College of Surgeons, so that, whatever the difficulties with which the council may be faced in other directions, research will not suffer.

Government Services

Changes in Public Health Service

The following changes appeared among others in official orders issued by the U. S. Public Health Service recently:

Medical Director Frank M. Faget, relieved at Stuttgart, Germany, July 1, and ordered to Lisbon, Portugal, for duty at the American Consulate.

Asst. Surg. Albert N. Sarwold, relieved at San Francisco, August 15, and ordered to the U. S. Quarantine Station, Manila, P. I.

New Consultant in Industrial Hygiene

Dr. William J. McConnell, assistant medical director, Metropolitan Life Insurance Company, reported for duty on August 7 as a consultant to the division of industrial hygiene, National Institute of Health, Bethesda, Md. He will direct the procedure to be used in the nationwide survey of present day medical service facilities in industry. Dr. McConnell graduated at St. Louis University School of Medicine, St. Louis, in 1914.

Psychiatric Nursing Consultant Appointed

The U. S. Public Health Service has appointed Miss Mary E. Corcoran, former superintendent of nurses at the New Jersey State Hospital at Greystone Park, to be psychiatric nursing consultant in the section on mental health methods, effective September 1. The section on mental health methods operates a survey service for mental hospitals and assists in the establishment of state mental hygiene-public health programs.

Malaria Project in China

A group of sixteen persons has been assigned by the U. S. Public Health Service to protect the health of 250,000 Chinese workmen building a railroad to parallel the Burma road through 300 malaria-infested miles in China, newspapers reported on August 16. The unit was formed at the request of the Chinese government and will be in charge of Dr. Victor H. Haas, passed assistant surgeon, U. S. Public Health Service. Dr. Haas and D. E. Wright, sanitary engineer of the Rockefeller Foundation, were to leave San Francisco for China on August 23 to launch the project. Others who will serve on the program include Dr. Marshall C. Balfour of the International Health Board of the Rockefeller Foundation; Dr. Thomas H. Tomlinson Jr., passed assistant surgeon, public health service; William L. Jellison, an entomologist stationed at the public health service laboratory in Hamilton, Mont.; Fred W. Thomas and Edward R. Lacey, sanitary engineers lent by the Tennessee Valley Authority; Gordon Smith, entomologist of the Tennessee Valley Authority; Dr. Fred P. Manget, Methodist missionary, who will supervise medical care of laborers, and Dr. Paul H. Stevenson of the Rockefeller Foundation, who has been working with medical centers and hospitals in China for twenty years. It is said that the group will be known as the Medical Commission to the Burma-Yunnan Railroad. The public health service and the foundation will pay the salaries of their men on the project, and the U. S. government has allocated \$1,150,000 of lease-lend funds to the work.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 5, 1941.

Deliberate Attacks on Hospital Ships: Enemy Hospital Ship Detained as a Hostage

Since the outbreak of war the government has been faced with the difficult problem of how to deal with violations of the Red Cross. Retaliation is of course out of the question. But an Italian hospital ship has fallen into our hands and provided a hostage. The government has defined its action as follows: On July 12, 1940 it made a protest to the German government through the United States government against thirty-one flagrant attacks by aircraft and shore batteries on British hospital ships and carriers. Many of these hospital ships were severely damaged and three—the *Maid of Kent*, the *Brighton* and the *Paris*—were sunk. All these sinkings and at least half the other attacks took place in broad daylight. All the ships concerned were marked in accordance with the Hague convention.

Recently the commander in chief of the Mediterranean fleet has reported three attacks on hospital ships. On April 14, the hospital ship *Vita* with over 400 casualties on board was bombed by aircraft and badly damaged. While in tow the *Vita* was again attacked on April 21 and 22. On May 5 the hospital ship *Kapara* was bombed and damaged by at least nine enemy aircraft at Mersa Tobruk. On May 17 the hospital ship *Aba* was twice bombed and damaged south of Crete. Attacks were also made on Greek hospital ships.

The British government, it was said, is not prepared to tolerate such flagrant violations of a convention which has been signed and approved by the German and Italian governments and from which these, by marking their vessels, are receiving full advantage. It has therefore directed that an Italian hospital ship, which was intercepted and examined in accordance with the Hague convention, shall be detained and employed as a hospital ship for the transport of British and enemy sick and wounded. If attacks on British hospital ships cease, the return of the hospital ship will be considered.

Anti-Gas Precautions

Precautions continue to be taken against an attack by poison gas. The Ministry of Health has distributed to every householder a pamphlet "What to Do About Gas." Uninjured civilians contaminated by blister gas are told to take off any splashed outer garments at once and then go home or to the nearest private house or other place where they can wash. If they are more than five minutes from such a place it is the duty of the wardens or police to tell them what to do and, if appropriate, direct them to the nearest public cleansing center. The service departments have agreed that any sailor, soldier or airman who is grossly contaminated by liquid gas when away from his unit shall act in accordance with these instructions for civilians. At a public cleansing center he should be dressed and clothed in the same way as a civilian and instructed to report to the nearest unit for his service, which will return the borrowed clothes.

The Ministry of Food has issued directions for the protection of food against contamination by poison gas. The problem of protecting medical supplies presents some special problems, which have been dealt with in a circular issued by the Ministry of Health. The normal conditions of storage in warmed and ventilated buildings should provide for most articles all that is practicable in protection against liquid contamination. Some additional protection may be afforded by

waterproof sheeting, batiste, cellophane or other impermeable material. Surgical dressings wrapped in paper, cardboard or cartons should not become contaminated by exposure to vapor, provided the wrappings are undamaged. Traces of vapor can be removed by opening them out and airing them. Where means are available, sterilization might be undertaken. If contaminated by liquid, it is doubtful whether any decontamination would be successful, and destruction by burning may be unavoidable. Vapor contamination of rubber materials can be removed by airing; liquid contamination, by immersion in boiling water for one to three hours. But the finest grade of rubber materials, such as catheters and surgeons' gloves, are unlikely to stand boiling and, if contaminated by liquid, should be destroyed. Covering to prevent such contamination is therefore desirable. Metal instruments can be decontaminated by immersion for thirty minutes in boiling water or by repeated swabbing with solvent.

Electroencephalographic Changes in Head Injuries

At the Neurological Section of the Royal Society of Medicine Squadron Leader Dennis Williams (medical officer of the air force) described the electroencephalographic changes which he had found after head injuries. He divided them into those occurring immediately after the injury and those observed in the chronic post-traumatic state, which might last for years. Three forms of abnormality were observed: (1) large slow waves with a period and amplitude related to the severity of the injury, (2) absence or diminution of the normal frequencies and (3) during the period of recovery shortly after the injury outbursts of high voltage sine waves like subclinical epileptic attacks. Slides were used to show progressive recovery of the electroencephalogram which closely followed clinical improvement. Records taken within twelve hours of simple concussion were normal, in contrast to gross abnormalities found in more severe head injuries. The disturbance was initially generalized, but as improvement took place areas of maximal abnormality were found. These coincided with areas of direct cerebral trauma by bomb fragments, with depressed fractures and with physical signs of corresponding cerebral damage, but they were found also in silent areas. In cases of mental changes characteristic of the frontal lobe syndrome electroencephalographic changes were found only in the frontal poles. It was concluded that in the acute post-traumatic state the electroencephalogram accurately reflected the degree of cerebral damage.

Investigation of the chronic post-traumatic state showed that half the patients had an abnormal electroencephalogram in contrast to 3 per cent for normal flying crews. There was a positive correlation between the length of post-traumatic amnesia and the percentage abnormality of the electroencephalogram. While almost every patient with dural penetration had an abnormal electroencephalogram, almost all who were free from symptoms had none. It was concluded that in most cases an abnormal electroencephalogram after a head injury is a direct result of organic cerebral damage and that the chronic post-traumatic syndrome of headaches, vertigo, loss of concentration, undue fatigue, mood changes and alteration in personality is usually organic in origin when the electroencephalogram is abnormal.

Marriages

ERNEST BOSTELMAN to Mrs. Geraldine Olson, both of Fort Myers, Fla., in Nashville, Tenn., recently.

JAMES H. CODDINGTON, Humboldt, Iowa, to Miss Betty Isaacson of Fort Dodge, at Wraywood, July 6.

ALEXANDER BRUCE STEARNS, Manchester, Iowa, to Miss Doris Young of Cedar Rapids, July 5.

Deaths

Max Aaron Goldstein * St. Louis; Missouri Medical College, St. Louis, 1892; past president of the American Academy of Ophthalmology and Otolaryngology, American Otological Society and the American Laryngological, Rhinological and Otological Society; past president of the American Speech Correction Association and the National Forum on Deafness and Speech Pathology; member of the American Laryngological Association; fellow of the American College of Surgeons; served during the World War; professor of otology and director of the laboratory of clinical microscopy, Beaumont Hospital Medical College, from 1896 to 1901; professor of otology, Marion Sims Beaumont College of Medicine, from 1901 to 1903; professor of otology, St. Louis University School of Medicine, from 1903 to 1908 and professor of ear, nose and throat diseases from 1908 to 1911; in 1933 received the second annual St. Louis Award in recognition of his research in dealing with the problems of the deaf; founder and director of the Central Institute for the Deaf; director of the department of otolaryngology, Jewish Hospital for many years; founder and editor of the *Laryngoscope*; in 1937 received the honorary degree of doctor of laws from the Washington University; aged 71; died, July 27, in Frankfort, Mich., of cerebral hemorrhage.

Warren Robert Rainey * St. Louis; Northwestern University Medical School, Chicago, 1910; assistant professor of clinical surgery at the Washington University School of Medicine; member of the American Proctologic Society; fellow of the American College of Surgeons; served during the World War; aged 54; proctologist, Robert Koch Hospital; surgeon, St. Luke's Hospital; assistant surgeon, Jewish Hospital; clinical assistant, St. Louis Children's and the Barnes Hospital, where he died, July 28, of Rocky Mountain spotted fever.

Dwight Chester Nelson, Kiulungkiang, Yunnan, China; University of Colorado School of Medicine, Denver, 1935; a medical missionary; director of the Presbyterian Hospital; formerly with the United States Public Health Service; at one time assistant in biology, embryology and research technician in the department of physiology, pharmacology and medicine at his alma mater; formerly clinical director and head of the neuropsychiatric service in the United States Northeastern Penitentiary, Lewisburg, Pa.; aged 33; was drowned, July 5.

Norman Clyde Baker * Boston; Jefferson Medical College of Philadelphia, 1908; secretary of the Massachusetts Hospital Association from 1936 to 1940; served during the World War; aged 58; superintendent of the Newport (R. I.) Hospital from 1922 to 1926; assistant director of the Massachusetts General Hospital, where he died, July 31, of arteriosclerosis and coronary thrombosis.

Emmett F. Cook * St. Joseph, Mo.; American Medical College, St. Louis, 1897; an Affiliate Fellow of the American Medical Association; past president and secretary of the Buchanan County Medical Society; served during the World War; member of the state legislature; aged 68; died, July 22, in the Missouri Methodist Hospital of heart disease and cerebral hemorrhage.

Raleigh William Baird * Dallas, Texas; Bellevue Hospital Medical College, New York, 1896; at one time professor of clinical medicine at Baylor University College of Medicine; fellow of the American College of Physicians; for many years president of the Dallas Medical and Surgical Clinic and Hospital; on the staff of the Baylor University Hospital; aged 71; died, July 13.

Norman Thomas McLean * Medical Director Captain, United States Navy, retired, Pearson, Md.; Tufts College Medical School, Boston, 1900; fellow of the American College of Surgeons; entered the navy in 1904 and retired in 1934 for incapacity resulting from an incident of service; aged 65; died, July 26, in the United States Naval Hospital, Washington, D. C.

Elmer Harrison Ormsby * Amsterdam, N. Y.; Albany Medical College, 1913; past president of the Medical Society of the County of Montgomery; secretary-treasurer of the New York State Association of School Medical Inspectors; school physician; chief examiner of a draft board; served during the World War; aged 51; died, July 17, of acute cholangitis.

Archibald McIntyre Strong * New York; Columbia University College of Physicians and Surgeons, New York, 1908; member of the French Hospital ambulance staff during the World War; served with the American Red Cross commission in Serbia in 1915; for many years on the staff of the Presbyterian Hospital; aged 60; died, July 21.

Stanley Haviland Martin, Richmond, Va.; Queen's University Faculty of Medicine, Kingston, Canada, M.B. in 1915 and M.D. in 1926; member of the Kentucky State Medical Association; formerly medical missionary in Korea and Manchuria for the United Church of Canada Mission; aged 51; died, July 24, of rheumatic heart disease.

Clement Laird Vallandigham Bell, Norwalk, Ohio; Homeopathic Hospital College, Cleveland, 1888; served during the World War; for many years county coroner; formerly health commissioner of Norwalk; aged 77; died, July 7, in the Veterans Administration Facility, Brecksville, of carcinoma of the prostate.

George Casper Bartley, Escanaba, Mich.; Milwaukee Medical College, 1910; member of the Michigan State Medical Society; formerly acting assistant surgeon in the United States Public Health Service; for many years member and president of the board of education; aged 56; died, July 13, of acute myocarditis.

Richard Franklin Slaughter * Augusta, Ga.; University of Virginia Department of Medicine, Charlottesville, 1930; professor of neurosurgery at the University of Georgia School of Medicine; aged 34; died, July 4, in the Johns Hopkins Hospital, Baltimore, of brain abscess and cranial osteomyelitis.

Charles R. Silverthorne, Woodward, Okla.; University of the South Medical Department, Seawance, Tenn., 1898; member of the Oklahoma State Medical Association; formerly physician in charge of the Woodward General Hospital; aged 70; died, July 27, in Bakersfield, Calif., of cerebral hemorrhage.

Hiram Leslie Reckard, Baltimore; Baltimore Medical College, 1895; for many years on the staff of the Presbyterian Eye, Ear, Nose and Throat Charity Hospital and the Church Home and Infirmary; aged 69; died, July 26, in the University Hospital of uremia following prostatic obstruction.

Morris Fellman * Weehawken, N. J.; Syracuse University College of Medicine, 1925; consulting surgeon at the Margaret Hague Maternity Hospital and attending surgeon at the Jersey City Medical Center, Jersey City; lieutenant commander, United States Navy Reserve; aged 43; died, July 13.

Lester Lawrence Smith * Assistant Surgeon, United States Public Health Service, Seattle; University of Illinois College of Medicine, Chicago, 1939; on the staff of the U. S. Marine Hospital; aged 28; was drowned, July 5, in the Russian River near Guerneville, Calif.

Murray B. McGonigle * Toledo, Ohio; Ohio Medical University, Columbus, 1900; member of the American Urological Association; served during the World War; on the staffs of the Toledo and Mercy hospitals; aged 67; was found dead, July 29, of a self-inflicted bullet wound.

Thomas Francis Plunkett * Derby, Conn.; Long Island College Hospital, Brooklyn, 1908; chairman of the board of education; formerly health officer and school physician; aged 60; on the staff of the Griffin Hospital, where he died, July 20, of coronary thrombosis.

Charles B. J. Mittelstaedt, Kingston, N. Y.; Bellevue Hospital Medical College, New York, 1896; served during the World War; aged 69; on the staff of the Kingston Hospital, where he died, July 25, of diverticulum of the bladder, gastric ulcer and myocarditis.

Alfred Charles Smith, Brockton, Mass.; Tufts College Medical School, Boston, 1898; at one time secretary and treasurer of the Plymouth District Medical Society; member of the Massachusetts Medical Society; aged 71; died, July 15, of coronary thrombosis.

Lawrence Norman Breene, Farrell, Pa.; Medico-Chirurgical College of Philadelphia, 1912; member of the Medical Society of the State of Pennsylvania; aged 54; died, July 19, in the Veterans Administration Facility, Aspinwall, of Friedreich's ataxia.

Benjamin Sidney Chapman, Montgomery, Ala.; University of the City of New York Medical Department, 1892; member of the Medical Association of the State of Alabama; for many years school physician for the city health department; aged 71; died, July 15.

Abraham Joseph Hurwitz, Boston; Tufts College Medical School, Boston, 1902; member of the Massachusetts Medical Society; on the staff of the Beth Israel Hospital and the Boston Dispensary; aged 65; died, July 30, of angina pectoris and myocarditis.

Harry Graves Bevington, Detroit; Cleveland Homeopathic Medical College, 1898; member of the Michigan State Medical Society; served in various capacities on the staff of

the Grace Hospital; aged 64; died, July 15, of coronary thrombosis.

Wallace Steele Bryan ☉ Ramey, Pa.; Jefferson Medical College of Philadelphia, 1906; past president of the Clearfield County Medical Society; for many years president of the board of education; aged 63; died, July 20, of coronary thrombosis.

Charles Frederick Pinkerton, Salt Lake City; John A. Creighton Medical College, Omaha, 1899; member of the Utah State Medical Association; formerly on the staff of the Holy Cross Hospital; aged 65; died, July 13, of coronary occlusion.

Cornelius J. Lynch ☉ Yakima, Wash.; Kentucky School of Medicine, Louisville, 1900; fellow of the American College of Surgeons; past president of the Washington State Medical Association; aged 66; died, July 18, in St. Elizabeth's Hospital.

Ernest Christian Day, Chicago; Rush Medical College, Chicago, 1936; member of the Illinois State Medical Society; captain, 108th medical regiment, Illinois National Guard, Camp Forrest, Tenn.; aged 37; was killed, July 20, in an automobile accident.

William Jefferson Prish, Fredonia, N. Y.; Hahnemann Medical College and Hospital of Philadelphia, 1885; member of the Medical Society of the State of New York; for many years health officer; aged 80; died, July 17, of coronary occlusion.

Mary P. H. Hough, Ambler, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1881; aged 83; died, July 25, in the Hospital of the Woman's Medical College of Pennsylvania, Philadelphia, of cerebral hemorrhage and embolism.

Atchilous Bramwell Moore, Greenville, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1878; University of Nashville Medical Department, 1880; member of the State Medical Association of Texas; aged 87; died in July.

Eugene Lester Baker, Oak Park, Ill.; University of Illinois College of Medicine, Chicago, 1925; major, 108th medical regiment, Illinois National Guard, Camp Forrest, Tenn.; aged 42; was killed, July 20, in an automobile accident.

George Reginald Smith, Port Huron, Mich.; Detroit College of Medicine, 1903; member of the Michigan State Medical Society; past president of St. Clair County Medical Society; aged 60; died, July 21, in the Harper Hospital, Detroit.

Guy Stone, Fargo, N. D.; National Medical University, Chicago, 1905; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1910; aged 64; died, June 22, in Minneapolis of coronary sclerosis.

William W. Morrison, Edgerton, Wis.; Northwestern University Medical School, Chicago, 1897; member of the State Medical Society of Wisconsin; for many years health officer; aged 72; died, July 12, of chronic myocarditis.

Jessie Stevens Edwards, Southampton, N. Y.; Woman's Medical College of the New York Infirmary for Women and Children, 1897; aged 77; died, July 17, in the Southampton Hospital of chronic myocarditis and chronic nephritis.

John Kent Johnston ☉ Tallahassee, Fla.; University of Maryland School of Medicine, Baltimore, 1912; served during the World War; surgeon in chief of the Johnston Sanitarium; aged 53; died, July 15, in Jacksonville of heart disease.

J. L. Webster Peck, Frankton, Ind.; Physio-Medical College of Indiana, Indianapolis, 1895; member of the Indiana State Medical Association; aged 71; died, July 7, of cerebral thrombosis, chronic myocarditis and arteriosclerosis.

Roy Henry Garm, Beardstown, Ill.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1901; served during the World War; aged 62; died, July 23, in the Norbury Sanatorium, Jacksonville, of cerebral hemorrhage.

Philip Griesbaum, Lebanon, Ill.; Washington University School of Medicine, St. Louis, 1910; member of the Illinois State Medical Society; president of the high school board of education; aged 57; died, July 29, in Jacksonville.

Eustace Cosmo Mason ☉ Quebeck, Tenn.; University of Nashville (Tenn.) Medical Department, 1908; served during the World War; aged 72; died, July 15, in St. Thomas Hospital, Nashville, following an operation for appendicitis.

William Lee Jennings, Indianapolis; University of the City of New York Medical Department, 1888; member of the Indiana State Medical Association; aged 78; died, July 26, in the Methodist Hospital of carcinoma of the pancreas.

William Elbert Faris, Birmingham, Ala.; University of Tennessee Medical Department, Nashville, Tenn., 1916; served during the World War; aged 53; died, July 24, of bilateral pulmonary tuberculosis and pyelonephritis.

William Bernard Kinlaw ☉ Rocky Mount, N. C.; University of Pennsylvania School of Medicine, Philadelphia, 1920; fellow of the American College of Physicians; aged 45; was killed, July 24, in an automobile accident.

James William Gustin, Bay City, Mich.; Detroit College of Medicine, 1903; member of the Michigan State Medical Society; aged 64; died, July 21, in the Billings Memorial Hospital, Chicago, of heart disease.

Simon Seitz Mann, Columbia, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1894; member of the Medical Society of the State of Pennsylvania; aged 73; died, July 14, of coronary thrombosis.

James Eggleston Morrison, Fayetteville, N. C.; Atlanta (Ga.) School of Medicine, 1908; served during the World War; on the staff of the Veterans Administration Facility; aged 59; died, July 15, of heart disease.

Alphonse J. Gerend, Sheboygan, Wis.; Wisconsin College of Physicians and Surgeons, Milwaukee, 1903; served during the World War; aged 61; died, July 17, in the Veterans Administration Facility, Wood.

Edgar A. Pole, Hot Springs, Va.; Baltimore Medical College, 1897; member of the Medical Society of Virginia; aged 71; died, July 19, in the Martha Jefferson Hospital and Sanitarium, Charlottesville.

Bernard Bruce Newbarr, Los Angeles; Baltimore Medical College, 1911; at one time assistant professor of surgery at the Woman's Medical College of Pennsylvania, Philadelphia; aged 55; died, July 4.

William Bernhart Hamaker ☉ Lancaster, Pa.; Baltimore Medical College, 1905; on the staff of St. Joseph's Hospital; aged 63; died, July 15, in the Lancaster General Hospital of cerebral hemorrhage.

William Warren Sturgis, Valencia, Pa.; Jefferson Medical College of Philadelphia, 1887; member of the Medical Society of the State of Pennsylvania; aged 89; died, June 5, in Mars of chronic myocarditis.

Nicholas Frederick Feury, Orlando, Fla.; Vanderbilt University School of Medicine, Nashville, Tenn., 1898; served during the World War; aged 66; died, July 6, of myocarditis and arteriosclerosis.

Jacob Alexander Garrard, Bartow, Fla.; Southern Medical College, Atlanta, 1897; for many years president of the city council; formerly chairman of the county school board; aged 76; died, July 15.

Sidney Harris, Herbine, Ark.; Kentucky School of Medicine, Louisville, 1892; member of the Arkansas Medical Society; served during the World War; aged 74; died, July 28, of cerebral hemorrhage.

Jacob Compton Shinn, Bridgeton, N. J.; Hahnemann Medical College and Hospital of Philadelphia, 1899; aged 78; died, July 24, in the Ivy Hall Hospital of carcinoma of the pancreas and myocarditis.

Timothy Daniel Sullivan ☉ New York; Jefferson Medical College of Philadelphia, 1905; aged 67; on the staff of the Manhattan Eye, Ear and Throat Hospital, where he died, July 6, of heart disease.

William Franklin Pitt, Hayti, Mo.; St. Louis College of Physicians and Surgeons, 1923; member of the Missouri State Medical Association; aged 49; was killed, July 20, in an automobile accident.

William Samuel Fleming, Denver; John A. Creighton Medical College, Omaha, 1903; served during the World War; aged 68; died, July 18, of heart disease, arteriosclerosis and diabetes mellitus.

Mary Joan O'Leary, Milwaukee; Marquette University School of Medicine, Milwaukee, 1934; member of the State Medical Society of Wisconsin; aged 33; died, July 9, in East Troy, Wis.

James Alfred Copeland, Wickenburg, Ariz.; Fort Worth School of Medicine, Medical Department of Fort Worth University, 1902; aged 70; died, July 22, of carcinoma of the pancreas.

Amos Arthur Barton ☉ Plains, Pa.; Kentucky School of Medicine, Louisville, 1876; an Affiliate Fellow of the American Medical Association; aged 92; died, July 29, of chronic myocarditis.

George Denis Mulligan, Norristown, Pa.; Temple University School of Medicine, Philadelphia, 1927; formerly police surgeon; aged 43; died, July 27, in Philadelphia.

Bureau of Investigation

STIPULATIONS

Agreements Between Federal Trade Commission and Promoters of Various Products

The following items are abstracts of stipulations in which promoters of "patent medicines," cosmetics or medical devices have agreed with the Federal Trade Commission to discontinue certain misrepresentations in their advertising. These stipulations differ from the "Cease and Desist Orders" of the Commission in that such orders definitely direct the discontinuance of misrepresentations. The abstracts that follow are presented primarily to illustrate the effects of the provisions of the Wheeler-Lea Amendment to the Federal Trade Commission Act on the promotion of such products.

Advance Spectacle Company Eyeglasses—One Michael M. Egel does business in Chicago as the Advance Spectacle Company. In October 1940 he promised the Federal Trade Commission to desist from certain misrepresentations in the sale of eyeglasses, such as that his glasses will enable one to read, sew or see better in every way, or that the method used in testing the eyes and in purchasing his glasses is the same as used by any one else.

Albaderm—In January 1940 the Federal Trade Commission reported that one Harry Tombrack, trading as the Tomil Research Laboratories, New York, had promised to cease advertising that application of his Albaderm will of itself relieve acne or other skin blemishes, that persons with skin blemishes can obtain permanent relief therefrom, that Albaderm will remove bacterial infections causing skin blemishes and that it is harmless in all cases.

Barnard Grater—William G. Barnard and William G. Barnard Jr., trading as Natural Foods Institute, Cleveland, put out this food grater and a health booklet. In January 1940 they signed a stipulation with the Federal Trade Commission promising to cease and desist from representing that carrots or carrot juice is a remedy or competent treatment for any disease or disorder of the human body, that carrots contain more vitamins A, B, C and G than any other vegetable, that carrot juice has healing properties or unusual health value or helps counteract body toxins, that the book "Health Via The Carrot," outlines proper juice diets that will help correct any disease.

Black Drops—In June 1940 Mrs. L. H. Tillotson, Painesville, Ohio, promised the Federal Trade Commission that she would no longer advertise this product as being a "specific" for neuritis of the sciatic nerve, for kidney trouble or for any other disease, and as being a cure for any sickness or disease. She also agreed to cease representing that the product contains no drugs and is sold by a doctor of medicine.

Cento Tea—This product formerly known as "Aesculapius Tea" is put out by one Otto Wise, trading as The Medical Tea Company of California, Inc., Los Angeles. In June 1940 Wise promised the Federal Trade Commission that he would cease representing that the preparation or any of its ingredients is valuable in treating gall liver or kidney ailments or in preventing or dissolving kidney stones or gallstones, that the product is a competent and reliable agent for relief of symptoms associated with gall, liver or kidney ailments or possesses healing or analgesic properties and other similar representations, that it is not a laxative, that its ingredients are carried to the affected parts, that its every ingredient possesses therapeutic values and that its hypericum content stimulates the appetite. In the following month (July 1940) V. R. Smith, trading as Smith and Bull Advertising Agency, Los Angeles, likewise promised the Federal Trade Commission to discontinue the foregoing claims in advertisements of "Cento Tea."

Chief Two Moon Products—Under this brand name the Chief Two Moon Herb Company, Inc., Writbury, Conn., puts out a miscellany of nostrums, including a "Bitter Oil," a "Cough Elixir," a "Skin Cream," a "Stomach Relief," a "Kidney Relief," a "Nerve Remedy," a "Female Tonic," a "Rheumatism Relief," a "Tonic Relief," an "Eczema Relief" and a "Liver Relief." All but the first three of these are also designated by the term "All Herb." In May 1940 the concern promised the Federal Trade Commission to cease representing that the products have brought relief and restored health and happiness to thousands of sufferers, or that they are effective treatments for stomach trouble, tumors, rheumatism, kidney and liver ailments, nervousness and asthma.

Digests—This was advertised to overcome bad breath, promote improved digestion and to give "new relief." In April 1940 Wolverine Products, Inc., Detroit, stipulated with the Federal Trade Commission that it would discontinue these misrepresentations and would cease designating its preparation as "Digests" or using any other name implying that it is a digestive or has any direct effect on digestion.

Dixie Dale De Luxe Hair Preparation—In June 1940 Michael Michalik, trading as Dixie Dale Company, Chicago, promised the Federal Trade Commission that he would cease representing that "Dixie Dale De Luxe Hair Preparation" will grow hair or speed its growth, stop hair from falling out, give to hair strength or life, make hair softer and end dandruff troubles.

Egyptian Herb Tea—This is put out by one Ralph E. Pritchard, trading as Egyptian Herb Tea Company, Akron, Ohio. In September 1940 he signed a stipulation with the Federal Trade Commission promising to cease representing that his product is a competent treatment or effective remedy for obesity, is efficacious in the treatment of rheumatism, kidney trouble, high blood pressure, indigestion, gas on the stomach, pyelitis, backache or any other disorder aside from constipation.

Electro Health Activator—This device also known as "The New Improved Activator," is put out by Unico Products, Inc., Detroit. For a time the concern represented that it constructed or manufactured the device, that the thing was new in principle, had been approved by the medical profession, would benefit every one over 40, would have a rejuvenating or general tonic effect or would for the first time enable persons to use electrotherapy at home. In September 1940 the concern stipulated with the Federal Trade Commission that it would discontinue these misrepresentations and some others such as that the device has any physical therapeutic value (except as a possible aid in the temporary relief of chronic nerve pain when there is no acute inflammation present along the nerve and as an adjunctive treatment in cases in which its actual cutaneous stimulative properties are known to be helpful).

Fenton Compound—Having represented this product as a new type of medicine which constituted a medical discovery and as an effective treatment for lumbago, liver and kidney troubles, which would also increase the flow of bile from the liver and assist in removing poisons and impurities from the entire system, Will T. Warren Jr., trading as Fentone Medicine Company, Paris, Tenn., promised the Federal Trade Commission in October 1940 to discontinue these representations.

Glamour Permanent Wave Outfit—In June 1940 the Federal Trade Commission accepted a stipulation from Sally Lindner Sybil Moses and Jean Tanner, trading as Mollin Company, St. Paul, in which they agreed to discontinue certain misrepresentations in the sale of permanent wave outfits for home use. Among these were that by the use of their materials a permanent wave may be accomplished which will last for six months in every instance, regardless of the type or kind of hair treated, that it "reconditions the hair," or any similar statement so as to convey the belief to purchasers that the outfit will restore old, worn or faded hair to its original condition.

Grecian Chemical Company Products—A Philadelphia concern, the Grecian Chemical Company, trading as Zala Perfumery Company and The Olivo Company, promised the Federal Trade Commission in August 1940 to cease using the words "scalp food" or "Feed the scalp what it needs" so as to imply that its products act as nutriment for the scalp. Another government agency, the Food and Drug Administration, previously (July 1937) had reported that two preparations put out by the Zala Perfumery Company, Philadelphia, had been found to violate the Pure Food and Drugs Act because of fraudulent representations on their labels. These were "Olivo Hair Tonic," sold as a remedy for dandruff, eczema and falling hair, and "Olivo Hair Oil," put out for the same conditions. The "Hair Tonic" was reported by government chemists to consist of 71 per cent of denatured alcohol, about 19 per cent of castor oil and small amounts of glycerin, resorcinol, perfume and coloring, and the "Hair Oil" to be essentially petrolatum with about 2 per cent of a fatty oil and a small amount of resorcinol. This case was described under Notice of Judgment 26772, issued in July 1937 and briefly abstracted in THE JOURNAL, Sept. 24, 1938, page 1229.

Health Spot Shoes—The Musebeck Shoe Company, Danville, Ill., promised the Federal Trade Commission in August 1940 that it would cease representing that these shoes will relieve the wearer of foot trouble or enable him to get rid of foot disorders, including sick, sore, tired or aching feet, that the shoes represent perfect foot health and comfort insurance and will keep the feet healthy or control the bones of the feet. The company also promised to cease representing that these shoes keep the whole body in good posture and are fitted by persons who have taken a course in scientific shoe fitting.

Ives Wonder Pile Remedy—This is put out by C. G. Ives, Minneapolis, trading as Ives Drug Company, Glenwood Drug Company and Ives Druggist, who in May 1940 promised the Federal Trade Commission to cease representing that his nostrum is an effective remedy or competent treatment for hemorrhoids, that its use will render an operation unnecessary or that it had any therapeutic value in the treatment of hemorrhoids in excess of a mild, temporary palliative for the itching, burning and similar irritations that are usually due to or associated with, the superficial symptoms of some types of hemorrhoids. Ives further agreed to cease employing the word "Remedy" or any term of like import as part of a trade name used to describe the preparation.

Jones Pulmotor Arch Support—In March 1940 the Jones Pulmotor Arch Support Company, Kansas City, Mo., stipulated with the Federal Trade Commission that it would desist from advertising that its device would strengthen the feet or the foot muscles, rebuild the feet, correct or cure any foot disorder or any condition which causes foot or leg ailments, stimulate circulation of the blood or aid in the elimination of poisons and increase energy or vitality. The concern also agreed to cease representing that its arch supports are complete "air cushions" or that they cause any massaging effect or vacuum suction action which is of therapeutic, remedial or palliative value or effect or which aids in the elimination of fatigue or is beneficial to any part of the system.

Juliette Marglen Cosmetics—These are put out by Juliette Marglen Products Company, Hollywood, Calif. In April 1940 this concern signed a stipulation with the Federal Trade Commission agreeing to discontinue misrepresentations in its advertising. Among these were statements or representations tending to convey the belief that these products contain wax in such amount as to form a continuous wax coating such as would

afford protection to the nails to which applied, or of any representations that the products will afford any appreciable aid in keeping the cuticle soft and pliable, or that their use will encourage the growth of stronger or thicker nails or have a stimulating effect on the nails, or prevent cracking, breaking or splitting of the nails of the user.

Kamazin Powder—Israel Freed, trading as Kamazin Manufacturing Company, New York, signed a stipulation with the Federal Trade Commission in March 1940 in which he agreed to cease representing that the use of this product affords relief from the condition known as athlete's foot for a long period of time or affords permanent relief, and that doctors prescribe or endorse Kamazin Powder.

Kano—This product, formerly known as "Pecano," is put out by one Elam G Hess, Manheim, Pa. In April 1940 Hess, in a stipulation with the Federal Trade Commission, agreed to cease representing that Kano is the best source of tissue building material and revitalizes or releases one's body and that it is effective in treating malnutrition in all cases or in cases which may be due to causes other than a deficiency of the food elements supplied by this product. Hess also promised to cease making certain other misrepresentations for Kano particularly as a food product, such as that it supplies more nourishing value than does beefsteak, eggs, whole milk or fish.

Lesko Herbs Tea—In May 1940 Mrs Greta J Leskovar, New York, who puts out this nostrum, agreed in a stipulation with the Federal Trade Commission to cease representing that this product is a competent treatment or effective remedy for retarded, suppressed, irregular monthly periods, is an aid for the relief of the pain or discomfort attending irregular menstruation or will relieve the cramps or colic of troublesome or irregular menstruation due to exposure or cold or any other cause.

Lucone Herb Tonic—Lucone, Inc., New York, puts out this nostrum and in October 1940 it promised the Federal Trade Commission that it would cease using the word "Herb" as part of the trade name and from representing the thing as a herb tonic containing no greasy substances and capable of promoting or assuring a robust or abundant growth of hair, as preventing baldness or dandruff, saving the hair or stopping hair loss and keeping the hair roots active. The concern also agreed to cease advertising that its product is of aid in correcting unhealthy conditions of the scalp keeps the hair free of infection or preserves the scalp. In December 1940 Newmark's Advertising Agency, Inc., New York, which handled the Lucone advertising also stipulated with the Federal Trade Commission that it would discontinue these objectionable representations.

Mayhugh's Oil Solution and Nasal Inhaler—These products were advertised for the treatment of hay fever, asthma and colds by Harry D. Mayhugh, trading as Nasal Inhaler Company, Walton, Ky. In October 1940 he stipulated with the Federal Trade Commission that he would cease representing that his medicine and the inhaler constituted a competent treatment or effective remedy for hay fever, rose fever, asthma, colds and other inhalant ailments, afforded freedom from congestions in the head, assured daytime relief or restful slumber at night, and rest for children as well as adults, that physicians recognized in "Mayhugh's Nasal Inhaler" a device for properly treating inhalant ailments, that the inhaler filtered the pollen of flowering plants from the air, purified the air entering the nostrils or removed the cause of hay fever and asthma due to pollen or dust and that it filtered the germs from the air inhaled, relieving congestion of the nostrils during a cold.

Mystic Cream—Mystic Laboratories Inc., Jersey City, N. J., promised the Federal Trade Commission in April 1940 to cease representing that this product is an amazing or scientific development or that, when rubbed on the hands, it will make them as soft or as white as the hands of a child, that it will cause any immediate transformation in the condition of the skin or has any other than a temporary effect on the skin unless used regularly or unless such representations are limited to rough, red or chapped hands.

Native Herb Medicine—In October 1940 one Oman E. Johnston, trading as Kenjol Pharmaceutical Company, Fremont, Ohio, promised the Federal Trade Commission that he would discontinue certain misrepresentations in the sale of his "Native Herb Medicine." Among these were that the product will relieve or cure ailments such as biliousness or colds or rid the system of lumbago or rheumatism, that it is a competent remedy for functional diseases such as hardening of the arteries, diseased kidneys and other ailments, that it possesses any direct remedial value, or that it has medicinal properties other than that of a laxative.

Nu-Nile Double-Strength Tar Hair Grower—This is put out by the Peerless Products Company, Jersey City, N. J. For a time it was represented to aid in the growth of hair, contribute nourishment to the scalp, stop the falling of hair, remedy eczema of the scalp or any other kind of eczema or be an effective treatment for dandruff. In September 1940 the company promised to discontinue such representations and also that "Nu Nile Pressing Oil Glossine and Special Hair Grower" has any special value as a hair grower, that it will keep the hair soft, smooth or glossy or do more than impart an oily substance to the surface of the hair shafts, which temporarily makes them feel soft and appear smooth and glossy. Further, the company agreed to cease using the word "Grower" or any simulation or abbreviation of it to describe either of its preparations.

Owl Stimulators—This product, also known as "Owl Stimulators," was advertised by W. J. O'Neil, trading under the names Owl Stimulators Co., O. S. T. Co. and Owl Stimular Tablet Co., Boston, as being capable of stimulating "pep," vigor and vitality or as having tonic, nutritive or stimulating properties. In September 1940 O'Neil stipulated with the Federal Trade Commission that he would discontinue these claims and certain other representations.

Palm Beach Hair Grower and Palm Beach Pressing Oil—These are put out by a Mrs C. T. Hall of Chicago, who in October 1940 stipulated with the Federal Trade Commission that she would discontinue certain misrepresentations in the sale of the products. Among these were that by the use of them the scalp is made healthy, that the hair regains its vitality or that new life appears or can be seen in the strands of the hair, that "Palm Beach Hair Grower" is beneficial to the roots of the hair, is a competent treatment or effective remedy for diseased or itchy scalp, or for dandruff, or that it heals such conditions. Mrs Hall further agreed to cease using the word "grower," or any words of similar import or any letters, word or syllable that simulate "grower" in sound or spelling, on the label of the containers, or as a part of the trade name of any of the products.

Peacock's Garlic Capsules—In May 1940 New England Products, Inc., Evanston, Ill., promised the Federal Trade Commission to cease representing that this preparation is rich in calcium, potassium or phosphorus or provides alkaline properties for the human system, that it is of value in the treatment of colon irritation or indigestion, except through any value it may have as a carminative, or in treating high or low blood pressure, except for certain temporary benefits, that it is of value in treating rheumatism, bronchitis or other respiratory infections or is anti-septic or has germ-killing powers when taken internally.

Rilling Koolerwave and Rilling Concentrator—The first of these is a hair waving device of the machineless type and the second, a hair dryer. They are put out by Rilling Arnau Company, Minneapolis. In October 1940 the Federal Trade Commission reported that this concern had signed a stipulation to cease advertising that a permanent wave given with Rilling Koolerwave equipment starts at the scalp or is one-half inch closer, or closer by any definite measurement, than any other method, that all methods of permanent waving other than the Rilling Koolerwave injure the hair.

Safe-Clean Laxative—This is put out by Roy Quinlan, trading as San Clean Products Company, New York, who in June 1940 stipulated with the Federal Trade Commission that he would discontinue certain misrepresentations in his advertising. Among these were that the product is a "wonderful discovery" producing "amazing results," or that its results are different from those of competing laxatives, that it will end constipation, contains nothing injurious and is not habit forming, that its use will keep the intestine clean and healthy and that it has any appreciable effect on the functioning of the liver or kidneys. Quinlan admitted, among other things, that a laxative is contraindicated under certain conditions, in which cases this preparation would not be safe for use.

Spencer's Cold Ointment—This was involved in a stipulation signed in September 1940 by Brown Drug Company, Sioux Falls, S. D. In this the concern promised the Federal Trade Commission to desist from advertising its preparation as having a wool fat base, as containing double strength or extra strength medication, and as being capable of penetrating the skin. Further, the company agreed to cease representing that its ointment is a competent remedy or an effective treatment for colds, and that cold ointments made with a mineral jelly base stay on the surface of the skin because of the presence of the mineral jelly.

To-He-To Ointment—In April 1940 John W. Oneal, trading as J. W. Oneal Chemical Company, Martins Ferry, Ohio, promised the Federal Trade Commission to discontinue certain misrepresentations in the sale of this ointment. Among these were that it is a competent or effective remedy for colds, headaches, sore throat, croup, pneumonia, chafed hands, itching hemorrhoids, sore muscles, chilblains, bruises, rheumatism or hay fever or that it will do more than serve as a palliative in connection with certain of these conditions.

Uriel Buchanan's Regenerating System—This consisted of literature sent out under the name of Uriel Buchanan, who distributed booklets and mimeographed sheets entitled "Keeping Young" and "Health and Rejuvenation." In September 1940 Buchanan stipulated with the Federal Trade Commission that he would cease advertising that his literature contains instructions pertaining to health food and diet which when observed and applied, will enable one to regain youth or youthful vitality, ward off old age, prolong life, acquire or keep a youthful body, reactivate or rejuvenate glands, and similar representations, and that he would discontinue representing that his literature discloses any secrets, discoveries or newly discovered principles.

Walter C. Rathke Cosmetics—Rathke conducted a cosmetic business in St. Paul, using the name W. C. Rathke Laboratories. It appears that he had some connection with a Minneapolis outfit known as Continental News, Inc., which published a magazine called *True Mystic Science* and sold cosmetics under the trade name "Mystic Glow," as Rathke also apparently did. In September 1940 the Federal Trade Commission accepted from these concerns stipulations in which they promised to discontinue certain objectionable practices and representations. Among these were designating a complexion cream as a "tissue cream" or a "skin normalizer" or as one that "penetrates deep" into the skin or promotes "skin health," or otherwise has any beneficial effect on the tissues of the skin cell structures, representing that a cleansing cream "revitalizes" the skin, that the cactus plant has any recognized curative or mystic healing properties or that an "oil" extracted from cactus has been known since ancient civilization to possess any unusual healing qualities, that such cactus product or any other ingredient in these concerns' preparations lubricates withered skin to suppleness, stimulates fatigued glands, releases the precious drop of moisture confined at the bottom of each pore or penetrates into sluggish or atrophied glands or revitalizes them into activity.

Correspondence

COMPARATIVE FOOD SOURCES OF THIAMINE

To the Editor:—One of the points stressed by the keynote speakers of the recent National Nutrition Conference for Defense called by the President of the United States was the importance of a better knowledge regarding foods. At this conference the daily individual allowances of specific nutrients recommended were announced. This information was given in terms of calories, grams, milligrams and vitamin units, not of foods but of nutrient elements such as proteins, mineral elements and vitamins. Such information is obviously intended for those whose role it is to interpret them to the public in terms of foods.

Milligrams of Thiamine and of Riboflavin per Thousand Calories

Vegetable	Thiamine	Riboflavin
Asparagus.....	6.7	4.9
Beans, lima.....	2.6	...
Beans, snap.....	1.7	2.2
Beans, wax.....	2.1	2.4
Beets.....	1.1	0.5
Broccoli.....	2.7	5.9
Brussels sprouts.....	3.0	...
Cabbage.....	2.8	1.9
Carrots.....	1.6	1.5
Cauliflower.....	5.4	4.1
Celery.....	1.7	1.6
Corn.....	1.1 *	1.1 †
Corn.....	1.4 ‡	0.7 §
Endive.....	4.1	2.5
Kale.....	3.8	...
Lettuce.....	...	5.3 #
Lettuce.....	4.8 ¶	2.6 ||
Mustard greens.....	5.0	...
Okra.....	3.3	...
Onions.....	0.62	2.5
Peas.....	3.9	1.4
Potatoes.....	2.2 **	...
Potatoes.....	1.7 ††	0.50
Spinach.....	4.2	6.4
Squash, winter.....	1.1	1.0
Squash, summer.....	2.2	2.7
Sweet potatoes.....	0.74	0.55
Tomatoes.....	3.4	2.3
Turnip greens.....	3.8	...
Turnips.....	1.7	1.2
Average.....	2.8	2.4
Added to enriched flour.....	1.0	0.72

* White.

§ Mature.

|| Head.

† Roasting ears.

Leaf.

** New.

‡ Yellow.

¶ Head.

†† Old.

The lay consumer cannot be expected to think or reckon in terms of proteins, calories, milligrams of minerals or vitamin units.

Even before the vitamins were recognized it was urged that we consume more liberal amounts of dairy products, vegetables and fruits. When the vitamins were discovered, dairy products, vegetables and fruits were designated as the "protective foods." The following statement is quoted from Dr. Russell M. Wilder in *Science News Letter* in April 1941: "Thiamine is found generously in rather few foods, such as whole grain cereals, lean meats, peas and beans. . . . Most foods contain some thiamine, but many foods, like the garden vegetables, formerly thought to be excellent protective foods, are poor in thiamine."

If nutritional information is now to be based on terms of nutrient elements rather than on terms of food or food types, it is essential to examine foods with reference to these nutrient elements. This is particularly true in connection with vegetables, in view of the implication that they no longer should be regarded in the category of protective foods. A report of a biologic determination of the thiamine in some eighty foods is given in Technical Bulletin 707 of the United States Bureau of Home Economics. A. Z. Hodson of Cornell University recently reported in *Food Research* the riboflavin as determined chemically in a number of vegetables. Thiamine and riboflavin—the former in the amount of 1.66 mg., the latter in the amount of 1.2 mg. a pound—are both required in so-called enriched flour as recommended by Dr. Wilder's committee. The per person daily allowance of these vitamins as recommended by the committee is proportioned to the calory intake. This is done because, as the committee states, "they are part of the enzyme system involved in the metabolism of carbohydrates."

It seems logical therefore to consider the thiamine and riboflavin content of a food in terms of its calory content. There is another reason for this. A person's calory intake is a fairly fixed value as long as his living conditions undergo no material change; his appetite sees to that. If he undertakes to increase his vitamin or mineral intake through dietary procedure, this he can accomplish only by displacing certain food items low in these nutrient elements by an equal calory value of other foods containing them in higher amounts proportional to their calory values.

In the accompanying table are given the thiamine and riboflavin content as far as available from the two most recent reports cited, calculated in terms of their caloric content. The calory values of the vegetables was taken from circular 146, United States Department of Agriculture. The figures represent milligrams of vitamin per thousand calories of vegetable. In this proportion they are nearest simple whole numbers.

The amounts added to enriched flour are appended to this table for comparison. The amounts originally found in white flour are so small as to be of little consequence. A pound of flour represents 1,660 calories, and hence 1.66 mg. of thiamine and 1.2 mg. of riboflavin per pound represent respectively 1 and 0.72 mg. per thousand calories. It will be noticed that only onions and sweet potatoes are as low in thiamine as this, and only beets, sweet potatoes and mature roasting ears are as low in riboflavin. The average for all the vegetables is two and eight-tenths times the added thiamine in "enriched" flour and three and three-tenths times the added riboflavin.

In addition to the high content of these vitamins in vegetables, the other members of the B vitamin complex are, as far as evidence is available, present in similar proportions while absent in flour, or nearly so. This is equally true of other vitamins and of mineral elements. Colored vegetables, green and yellow, are recognized as among the richest source of vitamin A, and many vegetables are rich in vitamin C even if allowance is made for losses in cooking. While only green leaf vegetables are outstandingly high in calcium, in general vegetables are the best assurance of an adequate and balanced mineral supply in conjunction with the usually recommended intake of milk for calcium and phosphorus. Since vegetables are now shipped for long distances to nearly every locality, any mineral deficiency in soil and hence in the produce in one area is corrected by that from another area.

In the past, flour consumption went down as vegetable consumption rose. If "enriching" flour results in increased flour consumption, an equivalent calory value of other foods will be withdrawn from consumption, and it is likely that these other foods will be to a considerable extent vegetables. If the flour

consumption remains unchanged the diet will be enriched to the extent of the vitamins and minerals added to the flour. If an increase in flour consumption displaces vegetables, it follows inevitably that the nutritional quality of the diet will suffer. Vegetables supply more of the "at least forty different food substances" referred to by Surgeon General Parran of the United States Public Health Service, at the Nutritional Conference, than any other food but milk, and in an excellently balanced proportion.

On a weight basis the 1.66 and 1.2 mg. respectively of thiamine and riboflavin to be added to flour may seem high. But flour is never eaten as flour. This is ably expressed by Elizabeth Aughey and Esther Peterson Daniel of the United States Bureau of Home Economics in the *Journal of Nutrition*: "The whole grain cereals and dried legumes included in every list of thiamine-rich foods furnish less of this vitamin than is generally supposed. In the past these lists have been made up on the basis of raw foods and the large proportion of water absorbed during preparation leaves an average serving of the cooked product with a relatively lower thiamine value than is ordinarily realized. On a serving basis, baked potatoes, including skin, rank higher in thiamine than cooked whole wheat or oat cereals. Even boiled potatoes, spinach and carrots may be classed as furnishing amounts of thiamine per serving comparable to those supplied by these cooked cereals. One slice of an all-whole wheat bread also contains approximately the same quantity of thiamine as one serving of these vegetables and cereal foods."

This quotation leads to the conclusion that on a serving basis the vegetables singled out—about average representatives of all vegetables—are on a par with whole grain cereals in supplying thiamine, i. e. vitamin B₁. From the data in the table it is evident that they surpass the cereals about threefold on a calory basis. There seems ample justification that vegetables should continue to be rated among the so-called protective foods and that their increased consumption is one of the most effective means to attain the end striven for in modern nutrition.

E. F. KOHMAN, PH.D.,
Products Research Division,
Campbell Soup Company,
Camden, N. J.

NOTE.—As Dr. Kohman so ably points out, vegetables are important protective foods. As a class vegetables are not particularly rich sources of either thiamine or riboflavin. It does not seem practicable to try to make up for the loss of thiamine from the human dietary which results from the substitution of highly refined cereal foods for whole grain products by eating more vegetables. Six slices of whole wheat bread will supply about 0.5 mg. of thiamine, which is about as much as can be supplied by 4 ounces of potatoes plus 4 ounces of tomatoes plus 4 ounces of other vegetables. The values in the table provided by Dr. Kohman are impressive; they are, however, in terms of quantities of vegetables which will provide 1,000 calories. It takes about two hundred stalks of asparagus or 12 pounds of lettuce to get 1,000 calories. The Council on Foods and Nutrition has called attention to the importance of considering foods on the basis of the amount that can easily be eaten in a day. On this basis, potatoes rate as a good source of iron and of thiamine and an excellent source of ascorbic acid. Tomatoes are rated as excellent sources of vitamin A and ascorbic acid and as good sources of thiamine and riboflavin. Vegetables and enriched cereals are both good foods, but the important thing is to eat a well rounded, adequate diet.—Ed.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE
Chicago, Feb. 16-17, 1942. Council on Medical Education and Hospitals, Sec., Dr. William D. Cutter, 535 N. Dearborn Street, Chicago.

BOARDS OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES
Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, August 30, page 809.

NATIONAL BOARD OF MEDICAL EXAMINERS
NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II. Various centers, Sept. 15-17. Part III. Baltimore and New York City, October; Boston, November. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES
AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written*. Nov. 3. Final date for filing application is Sept. 23. *Oral*. Dec. 12-13. Final date for filing application is Nov. 8. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral*. April, in advance of the meeting of the American College of Physicians and June, in advance of the meeting of the American Medical Association. Final date for filing application is Oct. 20. Sec., Dr. William S. Middleton, 1391 University Ave., Madison, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written*. Part I, Group B. Various centers, Jan. 3. Final date for filing application is Oct. 6. *Oral*. Part II, Groups A and B. Atlantic City, May or June. Final date for filing application is March 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral*. Chicago, Oct. 18. *Written*. March 7. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Washington, January. Final date for filing application is Nov. 1. Sec., Dr. Guy A. Caldwell, 3503 Prytania St., New Orleans, La.

AMERICAN BOARD OF PEDIATRICS: *Oral*. Philadelphia, March or April, at the time of the Region I meeting of the American Academy of Pediatrics, Cleveland, May, at the time of the Region III meeting of the American Academy of Pediatrics, Los Angeles, May, at the time of the Region IV meeting of the American Academy of Pediatrics. *Written*. Locally, approximately 6 weeks in advance of the date of oral examination. Sec., Dr. C. A. Aldrich, 707 Fullerton Ave., Chicago.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: *Oral*. New York, Dec. 19-20. Final date for filing application is Oct. 5. Sec., Dr. Walter Freeman, 1028 Connecticut Ave., N.W., Washington, D. C.

AMERICAN BOARD OF SURGERY: *Written*. Part I. Various centers, Oct. 6. *Oral*. Part II. New York Nov. 10-11. A meeting of the board will follow on the 12th. Sec., Dr. J. Stewart Rodman, 225 S. Fifteenth St., Philadelphia.

AMERICAN BOARD OF UROLOGY: *Written*. Various centers, December. *Oral*. Chicago, February. Final date for filing application is Nov. 1. Sec., Dr. Gilbert J. Thomas, 1009 Nicolet Ave., Minneapolis.

Kentucky June Report

The State Board of Health of Kentucky reports the written examination for medical licensure held at Louisville, June 5-7, 1941. The examination covered eleven subjects and included 110 questions. An average of 70 per cent was required to pass. Seventy-nine candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Rush Medical College.....	(1940) 80,	(1941)	82
University of Louisville School of Medicine.....	(1940)		80,
	(1941) 76, 77, 77, 77, 78, 78, 78, 78, 79, 79,		
	80, 80, 80, 80, 80, 80, 80, 80, 80, 80, 80,		
	80, 81, 81, 81, 81, 81, 81, 81, 81, 81, 81,		
	82, 82, 82, 82, 82, 82, 82, 82, 82, 82, 82,		
	82, 83, 83, 83, 83, 83, 83, 83, 84, 84, 84,		
	85, 85, 86, 86		
University of Maryland School of Medicine and College of Physicians and Surgeons.....	(1941)		82
Creighton University School of Medicine.....	(1940) 78, 79,		
Meharry Medical College	(1941)		81

Seventeen physicians were licensed to practice medicine by reciprocity and 2 physicians so licensed by endorsement from January 15 through May 19. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine.....	(1924)		Arkansas
Northwestern	(1935)		Missouri
Rush Medical			Missouri
Tufts College			Florida
Eclectic Medical			Ohio
University of Cincinnati College of Medicine	(1936), (1939), (1940)		Ohio
Vanderbilt University School of Medicine.....	(1937)		Tennessee
University of Tennessee College of Medicine.....	(1937)		Tennessee
University of Vermont College of Medicine.....	(1924)		Connecticut
University of Virginia Department of Medicine.....	(1936)		W. Virginia
Queen's University Faculty of Medicine.....	(1932)		W. Virginia
	Year Endorsement		
School	LICENSED BY ENDORSEMENT	Year Grad.	of
College of Medical Evangelists.....	(1940)		N. B. M. Ex.
Queen's University Faculty of Medicine.....	(1915)		Newfoundland

* This applicant received the M.B. degree and will receive the M.D. degree on completion of internship.

*Miscellany*PROPOSED NEW ADMISSIONS TO THE
U. S. P. XII—ALSO "DELETIONS"

In the list of new admissions and deletions which follows, the titles have been arranged, so far as possible, with the basic drugs in alphabetical order and with the preparations grouped under the basic drugs so that the U. S. P. dosage forms of each therapeutically active substance can be known immediately. For convenience, only the English titles have been used, as these were better adapted to the plan of arrangement.

When admitted items are trademarked, the controlled title has been placed in parenthesis after the suggested U. S. P. title for their ready identification when reading this list. It is, of course, contrary to the policy of the Pharmacopeia to include trademarked titles in the U. S. P. itself unless these have been dedicated to the public. Some of the titles used are not definitely adopted, as the Subcommittee on Nomenclature is still giving them consideration. The U. S. P. vehicles, flavors, colors, solvents and other pharmaceutical aids, for the purposes of this report and for information, are placed in a second grouping. Items official in the U. S. P. XI but not admitted to the U. S. P. XII, usually spoken of as "deletions," will be found in the third list. An explanation of why some of these items were deleted from the Pharmacopeia is being given in another communication.

NEW ADMISSIONS TO THE U. S. P. XII

Acetophenetidin Tablets
Acetylsalicylic Acid Tablets
Acid Aminoacetic
Ascorbic Acid Tablets
Ammonium Mandelate Syrup
Nicotine Acid Tablets
Tannic Acid Solution (for burns)
Adhesive Plaster, Sterile
Alumina Hydrated
Alumina Hydrated, Magma
Ammonium Chloride Capsules
Amphet. mine (Benzedrine)
Amphetamine Sulfate
Amphetamine Sulfate Tablets
Atropine Sulfate Tablets
Barbital Tablets
Soluble Barbital Tablets
Bismuth and Potassium Tartrate Injection
Bismuth Subsalicylate Injection
Bismuth Sulfarsphenamine (Bismarsen)
Blood (Normal Human Blood)
Butaprobenz Sulfate (Butyn Sulfate)
Butesin Picate
Butesin Picate Ointment
Butyl Aminobenzoate (Butesin)
Caffeine with Sodium Benzoate Injection
Calcium Gluconate Injection
Calcium Mandelate
Calcium Sulfate
Calcium Sulfate Bandage Capsules (General Chapter)
Carbarsone
Carbon Tetrachloride Capsules
Cascara Sagrada Extract Tablets
Cenopodium Oil Capsules
Chinifol Tablets (enteric coated)
Chlorzodine (Azochloramide)
Chlorzodine Solution
Citrated Human Plasma
Cocaine Phosphate Tablets
Cocaine Sulfate Tablets
Colchicine Tablets
Desoxycortone Acetate (Desoxycortisone Acetate)
Dextrose Injection
Dextrose and Sodium Chloride Injection
Digitalis Capsules
Digitalis Injection
Digitalis Tablets
Dihydromorphinone Hydrochloride (Dilaudid)
Dihydromorphinone Hydrochloride Tablets
Diphenhydantoin Soluble (Dilantin Sodium)
Diphenhydantoin Soluble, Capsules
Emetine Hydrochloride Injection
Epinephrine Sulfate Tablets
Epinephrine Hydrochloride Injection
Epinephrine Hydrochloride, Strong Solution (1:100)
Ergonovine Maleate
Ergonovine Maleate Tablets
Ergonovine Maleate Injection
Ergotamine Tartrate
Ergotamine Tartrate Tablets
Estradiol Benzoate
Estrone
Estrone Injection (in Oil)
Estrone Tablets
Ethyl Aminobenzoate Ointment
Ethyl Carbamate
Eucatropine Hydrochloride (Euphrasine HCl)
Gauze, Absorbent
Gauze, Absorbent, Sterile
Gauze, Adhesive Absorbent
Gauze Bandage
Globulin, Human Immune
Halibut Liver Oil
Halibut Liver Oil Capsules
Hexylresorcinol
Homotropine Lamels
Human Serum
Injections (General Chapter)
Insulin Injection
Insulin, Crystalline Zinc, Injection
Insulin, Protamine Zinc, Injection
Iron and Ammonium Citrate Capsules
Iron (Ferrous) Sulfate, Exsiccated
Ferrous Sulfate Tablets
Lamels (Eye Disks)
Trisbasic Magnesium Phosphate Tablets
Magnesium Trisilicate
Magnesium Trisilicate Tablets
Menadione (Vitamin K Activity)
Menadione Tablets
Mercurin (Pharmaceutical Necessity)
Mercuphylline (Mercupurin Solution)
Mercury Salicylate Injection
Mersalyl (Salyrgan)
Mersalyl with Theophylline Injection
Melarsen (Mapharsen)
Methenamine Tablets
Morphine Sulfate Tablets
Neocinchophen Tablets
Neo-nigmine Bromide (Prostigmine Bromide)
Neo-nigmine Bromide Tablets
Neostigmine Methyl Sulfate (Prosignine M S)
Neostigmine Methyl Sulfate Injection
Nicotinamide
Nicotinamide Tablets
Olcovitamin A Capsules
Olcovitamin A and D Capsules
Concentrated Olcovitamin A and D Capsules
Ox Bile Extract Tablets
Ouabain
Ouabain Injection
Soluble Pentobarbital Tablets
Pentothal Sodium
Phenobarbital Elixir
Phenobarbital Tablets
Soluble Phenobarbital Tablets
Phenolsulfophthalein Injection
Physiological Solution of Chlorides (Ringer's Solution)
Physostigmine Lamels
Picrotoxin
Picrotoxin Injection
Potassium Chloride
Potassium Chloride Tablets
Progesterone
Progesterone Injection
Quinacrine (Atabrine)
Quinacrine Tablets
Quinidine Sulfate Tablets
Quinine Hydrochloride
Quinine Hydrochloride and Ethyl Carbamate Injection
Quinine Sulfate Tablets
Radium
Riboflavin
Riboflavin Tablets
Rice Polishing (Tikittiki)
Rice Polishing Extract
Saccharin Soluble Tablets
Serum, Human Scarlet Fever Immune
Serum, Human Measles, Immune
Sodium Citrate Solution, Sterile
Sodium Nitrite Tablets
Sodium Salicylate Tablets
Sodium Sulfite
Strophanthin Injection
Strychnine Sulfate Tablets
Sulfanilamide Tablets

Sulfarsphenamine
Sulfapyridine
Sulfapyridine Tablets
Sulfapyridine Soluble (Sterile for Injection)
Sulfathiazole
Sulfathiazole Tablets
Sulfobromophthalein (Bromsulphalein) Soluble
Suprarenal Cortex, Extract (Cortin)
Suprarenal Cortex Injection
Surgical Silk
Surgical Silk, Sterile
Suture, Surgical, Synthetic
Suture, Surgical, Synthetic, Sterile Tablets (General Chapter)
Testosterone Propionate
Testosterone Propionate Injection
Testosterone Propionate Tablets
Tetanus Toxoid
Tetracaine Hydrochloride (Pontocaine HCl)
Tetrachloroethylene
Tetrachloroethylene Capsules
Theobromine with Sodium Acetate
Theobromine with Sodium Acetate Capsules
Theophylline Tablets
Theophylline with Ethylenediamine Tablets
Theophylline with Ethylenediamine Injection
Theophylline with Sodium Acetate Tablets
Thiamine Hydrochloride Elixir
Thiamine Hydrochloride Tablets
Thyroid Tablets
Thyroxine Tablets
Totaguine
Tribromoethanol (Avertin)
Tribromoethanol Solution (Avertin with Amylene Hydrate)
Trichloroethylene (pearls)
Urea
Yeast
Yeast Tablets

NEW VEHICLES, FLAVORS, COLORS, SOLVENTS AND
OTHER PHARMACEUTIC AIDS

Amylene Hydrate
Bentonite
Cudbear
Glycerhiza Syrup
Ointment, Yellow (Simple Ointment with Yellow Wax)
Ointment (Absorption base type)
Soda Lime
Water for Injection

ARTICLES OFFICIAL IN THE U. S. P. XI BUT NOT
ADMITTED TO THE U. S. P. XII, COMMONLY
SPOKEN OF AS "DELETIONS"

Acetum Scillae
Acidum Aceticum Dilutum
Acidum Acetylannicum
Acidum Sulfuricum Aromaticum
Aconitum
Acriflavina
Acriflavinae Hydrochloridum
Aethylhydrocupreinae Hydrochloridum
Albumini Tannas
Ammonii Benzoyls
Ammonii Bromidum
Ammonii Salicylas
Arseni Trioxidum
Asafoetida
Bismuthi Subgallas
Calcii Bromidum
Cycui Creosotas
Cannabis
Cantharis
Capsicum
Carbomalum
Ceratum Cantharidis
Cinchona
Copiba
Creosoti Carbonas
Creosotum
Dichloramina T
Elixir Glycerhizae
Emplastrum Cantharidis
Emulsio Asafoetidae
Extractum Cannabis
Extractum Nueis Vomicae
Ferrum
Fluidextractum Belladonnae Radices
Fluidextractum Cannabis
Galla
Guaiacul
Hydrargyri Iodidum Flavum
Iodoformum
Kino
Liquor Ammonii Acetatis
Liquor Ferri Chloridi
Liquor Ferri Tersulfatis
Liquor Sodii Hypochloritis Dilutus
Magma Ferri Hydroxidi
Massa Hydrargyri
Meibaphenum
Mistura Opi et Glycerhizae Composita
Oleum Maydis
Oleum Santali
Paraffinum
Paraffinum Chlorinatum
Pepsinum
Pilulae Aloes
Podophyllum
Potassi Chloras
Pulvis Ipecacuanhae et Opi
Pulvis Sennae Compositus
Pyrogallol
Quinina
Resina Podophylli
Santonium
Scilla
Serpentaria
Sodii Acetas
Spiritus Aethylis Nitritus
Spiritus Chloroformi
Strychninae Nitrus
Sulfonethyldimethanum
Sulfur Lotum
Syrupus Ferri Iodidi
Syrupus Scillae
Terebinthum
Thechloramina cum Sodii Salicylate
Tinctura Acoriti
Tinctura Cantharidis
Tinctura Capsici
Tinctura Cinchonae Composita
Tinctura Ferri Chloridi
Tinctura Kino
Tinctura Scillae
Tinctura Valerianae
Tinctura Veratri Viridis
Unguentum Gullae
Valeriana
Veratrum Viride

PHARMACOPEIAL DELETIONS: ARTICLES OFFICIAL IN
THE U. S. P. XI BUT NOT ADMITTED TO
THE U. S. P. XII

The duties of the Subcommittee on Scope for each pharmacopeial revision are to decide deletions as well as admissions.

Since each pharmacopeia has always been intended to serve as a guide to the medical profession with respect to the best known and most widely used therapeutic agents of the revision period, with efficient preparations for their administration, one of the first duties of the committee is to make a selection of titles and preparations which meet these specifications.

For this purpose the items official in the current pharmacopeia are subjected to critical study and if, in the opinion of at least two thirds of the members of the Subcommittee on Scope, any of these substances or preparations have become obsolete or have been replaced by more efficient new remedies or preparations these items are refused a place in the new pharmacopeia. Such items are usually spoken of as "deletions." It should be understood that "extent of use" alone is not accepted as sufficient reason for the retention of any item in the U. S. P. but that a substance must first measure up to the requirement of therapeutic efficiency established by the U. S. P. when compared with the value of other medicinal substances.

It is true that the vote of a U. S. P. committee represents the opinion of a relatively small group and that these decisions may not always agree with the views of other able physicians, but the number of those voting (twenty-three) and the varied medical knowledge and experience which they represent have established general confidence in the wisdom, soundness and unbiased character of their decisions.

At the request of various individuals and groups an attempt has been made to indicate the reasons why some of the more widely known items were deleted. The following statement has been voluntarily prepared by one of the medical members of the Revision Committee to indicate his personal understanding of the views expressed by those who voted for the deletion of the following items:

Acetyltannic Acid and Albumin Tannate.—These have not proved efficient as intestinal astringents. There is evidence that high up in the small intestine the tannic acid is changed to sodium gallate, which is not astringent. Neither tannic acid nor gallic acid appears in the feces. Any astringent action is likely to be exerted in the stomach or duodenum rather than in the intestine lower down.

Aconite, Tincture of Aconite.—In fever it has been supplanted by strikingly better remedies. As a vagus stimulant it is not employed, probably because of its lack of certainty or its lack of safety in the necessary doses.

Acriflozine and Acrifloxine Hydrochloride.—It was employed extensively in World War I, but since that time its use has steadily declined. It is bacteriostatic rather than bactericidal. Recommended to replace iodine as an application to the skin in preparation for operation, it has been refused acceptance by many surgeons. Similarly in infectious and ulcerative conditions of the mouth, bladder, vagina and rectum, its use has steadily declined. The Subcommittee on Surgical Infections of the National Research Council has repudiated it on the ground that it is ineffective in the treatment of wounds.

Ammonium Benzoate, Bromide and Salicylate.—These have been used in the fallacious belief that the ammonium radicle is in some way protective to the heart. Ammonium salts are less stable and unnecessary duplicates of the corresponding salts of potassium and sodium.

Aromatic Sulfuric Acid.—Formerly used extensively as a solvent for quinine sulfate, and now obsolete.

Arsenic Triiodide.—Undesirable to administer both arsenic and iodine in a fixed salt of this type.

Asafetida, Emulsion of Asafetida.—Its value in hysterical conditions is questionable. Its use by mouth for flatulence is not justified by results. Its use by rectum in tympanites can be duplicated by pleasanter smelling and more effective agents.

Bismuth Subgallate.—It has no advantages over the subcarbonate. Because of the presence of gallic acid, it has produced the erroneous idea that it is astringent.

Calcium Bromide.—An unnecessary duplicate with no therapeutic advantages over other bromides.

Calcium Creosotate, Creosote, Creosote Carbonate, Guaiacol.—These and other creosote relatives are neither antiseptic in the respiratory tract nor expectorant. The local antiseptic value of creosote in a tooth cavity and its deodorizing value in pulmonary tuberculosis were not considered justification for its continuation in the Pharmacopeia.

Cannabis, Fluidextract of Cannabis, Extract of Cannabis.—A little used drug, very variable, and with the easily produced undesirable effects characteristic of marihuana indulgence.

Cantharis, Cantharis Plaster, Tincture of Cantharis.—Employed essentially as a local irritant and blistering agent. Blisters have fallen into disuse. As an irritant in scalp lotions and otherwise, the remedy is superfluous.

Capsicum, Tincture of Capsicum.—A local irritant with extensive use, but not considered important enough for the Pharmacopeia.

Carbromol.—A mild sedative, closely related to and differing little from the extensively used and better known barbiturates. The amount of bromine in a dose is altogether too small to give a bromide action.

Cinchona, Compound Tincture of Cinchona.—As antimalarial no longer employed. For the purposes of a bitter, remedies just as effective but simpler are available.

Compound Mixture of Opium and Glycyrrhiza.—Brown mixture represents what now is looked on as an almost extinct type of galenical. In teaspoon doses, its antimony and opium are too little to be therapeutically effective.

Compound Powder of Senna (Compound Licorice Powder).—As a senna preparation it is complicated by the presence of sulfur, which gives an unduly soft consistency to the stools and often a very offensive odor.

Copaiba.—An old time urinary antiseptic, bad tasting and irritating to the stomach and kidneys. It is not a very effective antiseptic in the urinary tract, and simpler and better drugs for the purpose are available.

Dichloramine-T and Dakin's Solution.—Dichloramine-T, the oil-soluble chlorine furnisher, and Dakin's solution (Diluted Solution of Sodium Hypochlorite) were deleted on the ground of their proved inefficiency. The water-soluble Chloramine-T was retained. For the slow and steady elimination of chlorine, Azochloramid in triacetin solution was considered superior and was admitted. The latter is now being extensively employed in Britain in preference to other chlorine antiseptics.

Diluted Acetic Acid.—This was a "pharmaceutic necessity" in the manufacture of Solution of Ammonium Acetate and Vinegar of Squill, both of which have been deleted.

Elixir of Glycyrrhiza.—The Syrup of Glycyrrhiza was substituted for the elixir on the basis of its more extensive employment and its freedom from alcohol.

Ethylhydrocupreine Hydrochloride.—Introduced for the treatment of pneumonia it has proved too toxic for oral or parenteral use, and ineffective. It is still employed as a local application in pneumococcal infections of the eye, but for this use it is rapidly being supplanted.

Extract of Nux Vomica.—Of no use as a bitter, and for a strychnine effect it is more rational to employ strychnine salts.

Fluidextract of Belladonna Root.—The exclusion of this follows the general principle that, where the dose is very small, such concentrated liquid preparations as fluidextracts are undesirable. It was formerly retained for the preparation of Belladonna Liniment, but this is no longer a Pharmacopeial preparation.

Iodoform.—Vile smelling and of low rating as an antiseptic. It is rapidly being replaced by more effective agents which lack the disagreeable odor.

Iron.—This was elementary iron, in the form of fine bright wire, filings or powder. It was used in the preparation of Syrup of Ferrous Iodide, which has been deleted.

Kino, Tincture of Kino.—A tannic acid remedy, which does not reach the lower intestine as such.

Magma of Ferric Hydroxide.—It was introduced as an arsenic antidote. At best it is not very efficient, and there are conflicting reports as to any efficiency at all.

Mass of Mercury (Blue Mass).—Now considered an obsolete mercury galenical preparation.

Merbaphen.—Its use has been largely abandoned in favor of the less toxic and more effective Salyrgan, which is now admitted to the Pharmacopeia.

Nutgall, Nutgall Ointment.—This is employed for its tannic acid, and preparations of the latter are to be preferred.

Oil of Santal.—Irritating to the stomach and kidneys, and not a powerful antiseptic in the urinary tract. Much more effective chemical remedies are now available.

Pepsin.—A powerful enzyme that is superfluous in therapeutics. For the digestion of protein it acts best in an acid medium of pH 1.5 to pH 2.5 and does not act at all in a medium above pH 4.0 to 4.5. In gastric achylia the needed acidity cannot be obtained in the stomach by any doses of acid that it is possible for a patient to swallow.

Pills of Aloe.—Drastic cathartics no longer have Pharmacopeial approval. However, Aloe itself has been retained, and also Aloin, which is not drastic.

Podophyllum, Resin of Podophyllum.—Also a drastic cathartic. Drastics are irritant to the whole alimentary tract, from the stomach down. If catharsis fails to take place, they are capable of producing inflammation of the intestine, and, after absorption, of the kidneys.

Potassium Chlorate.—An antiquated mouth astringent. Any internal use for it is not justified.

Powder of Ipecac and Opium.—Its main use is to produce sweating and sleep. Its ability to induce copious sweating depends mainly on the hot drinks with which it is administered and the heavy covering of bedclothes. The ipecac is nauseating and in this powder can scarcely be said to be used for its expectorant value. The opium is simply "dope," to be better prescribed by itself if it is desired.

Pyrogallol.—Not now much used as an antiseptic in therapeutics.

Quinine.—This is the pure alkaloid, as distinguished from its salts. It is not used in therapeutics and is not required as a "pharmaceutical necessity."

Santonin.—As an anthelmintic it has given place to newer remedies.

Serpentaria.—This was a "pharmaceutical necessity" in the preparation of Compound Tincture of Cinchona, which has been deleted.

Sodium Acetate.—The potassium salt is preferred and much more in use.

Solution of Ammonium Acetate.—Believed to be of no therapeutic value.

Solution of Ferric Chloride, Tincture of Ferric Chloride.—The solution was required for the preparation of the tincture. As an antianemia remedy the tincture has been largely supplanted by iron preparations that do not injure the teeth and are less astringent.

Solution of Iron Tersulfate.—Formerly used as a hemostatic, this makes a nasty mess when mixed with blood and is locally irritating and even corrosive.

Spirit of Chloroform.—Not desirable as a sedative and not needed as a carminative.

Spirit of Ethyl Nitrite.—Not effective as a nitrite and has no distinctive therapeutic properties.

Squill, Syrup of Squill, Tincture of Squill, Vinegar of Squill.—Squill lacks the highest approval as a cardiac drug. Its use as an expectorant is based on erroneous observations.

Strychnine Nitrate.—On account of the efflorescence of the sulfate, the nitrate was admitted to the last revision as a stable salt. However, it has not come into favor, and it was considered unnecessary to admit two strychnine salts.

Sulfonchylmethane.—The limitations and disadvantages of "Trional" as a hypnotic have greatly lessened its use.

Syrup of Ferrous Iodide.—Unsatisfactory as a means of administering either iron or iodine. The dose of each should be separately considered.

Terebene.—Neither antiseptic in the respiratory tract nor valuable as an expectorant.

Theobromine with Sodium Salicylate.—Theobromine with Sodium Acetate is considered better, and it eliminates the chance of harm to diseased kidneys from the salicylic radical.

Valerian, Tincture of Valerian.—Believed to be an overrated drug in hysteria, and too malodorous as a carminative.

Veratrum Viride, Tincture of Veratrum Viride.—A dangerously toxic drug, highly variable and but little used. Its chief employment is in eclampsia, in which extremely large (and

dangerous) doses are recommended by its advocates. Reports from many noted obstetricians are not favorable to its use in eclampsia.

Washed Sulfur.—Three forms of sulfur were deemed unnecessary for the Pharmacopeia. Precipitated Sulfur and Sublimated Sulfur are retained.

Yellow Mercurous Iodide.—Formerly extensively administered as an oral antisyphilitic, this remedy has been supplanted by more desirable remedies.

E. FULLERTON COOK.

Chairman of the U. S. P. XII Committee of Revision.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Optometry Practise Acts: Constitutionality of Limitation on Right to Advertise.—The Massachusetts optometry practice act (G. L. c. 112, sec. 73A) prohibits a person, in connection with the sale of eyeglasses, lenses or eyeglass frames, from including in any advertisement (a) "any statement advertising a frame or mounting at a fixed price unless a further statement, to the effect that said price is for the frame or mounting only and does not include lenses, eye examination or professional services, is included in said advertisement," or (b) "any statement advertising lenses or complete eye glasses including lenses at a fixed price," or (c) "any statement which lays claim to a policy or continuing practice of generally underselling competitors." The defendant, a dispensing optician, was convicted of violating these provisions of the act in that he caused the following advertisement to be published in a newspaper: "Eyeglasses complete! White single vision lenses and frames. Complete for only \$5. Your choice of ten modern style frames only \$2.50. We believe our prices to be those below any competitor," and, in effect, appealed to the Supreme Judicial Court of Massachusetts.

The defendant contended that the statute under which he was convicted was violative of both the state and federal constitutions as a deprivation of liberty and property without due process of law. Ordinarily, said the Supreme Judicial Court, a person has a right to engage in any lawful occupation and may by advertising attempt to create a public demand for his goods or services. Subject to the police power, the right to liberty and property includes the right to engage in any lawful occupation. Included also are the right to make contracts and to advertise the wares and the services furnished, for the purpose of creating a public demand and of inducing the public to trade with the advertiser rather than with some competitor. The defendant was an ordinary trader, not a professional man furnishing professional service or advice. Consequently, continued the court, the reasons on which the denial to a professional man of any right to advertise are based were not applicable to him. A denial of his right to advertise in such a manner as his judgment or his interest might dictate had to be justified, said the court, on one or more of the public needs or interests that together form the basis for what is called the police power. A familiar ground of the regulation or restriction of contracts or of advertising in a commercial business is the prevention of fraud and mistake. Where the public are not cautious or watchful in their buying habits, said the court, and are likely to be misled, the legislature may require not only the absence of active deception but also affirmative measures to prevent misunderstanding. In the opinion of the majority of the court the statutory requirement that one advertising a frame or mounting at a fixed price shall state that the price is for the frame or mounting only and does not include lenses, eye examination or professional services, fell within this principle and was a lawful exercise of the police power. The prohibitions against "advertising lenses or complete eye glasses including lenses at a fixed price" and against advertisements laying "claim to a policy or

continuing practice of generally underselling competitors," were treated together by the court. They were sustained as measures in the interest of the public health, an unquestioned ground for the exercise of the police power. The plain implication of the decision, said the court, is that the state has an interest in seeing that the eyesight of its citizens is not impaired by the use of eyeglasses or lenses unskillfully selected, even by the members of the public themselves. The legislature, concluded the court, was not prepared to prohibit the sale of eyeglasses and lenses as merchandise, to be selected by the buyer. It was prepared, however, to discourage it by eliminating the temptation to and pressure on customers that result from the assurance that no more than a named price will be charged, or that the price is less than competitors ask. Accordingly, the Supreme Judicial Court held the statute to be constitutional, overruled the defendant's exception and sustained the conviction. *Commonwealth v. Ferris*, 25 N. E. (2d) 378 (Mass., 1940).

Dental Practice Acts: Prejudging by Members of Licensing Agency Prior to Hearing in Disciplinary Proceedings.—The Connecticut State Dental Commission suspended Reardon's license to practice dentistry in Connecticut, presumably after notice and hearing. As to just what delinquencies Reardon was alleged to have been guilty of the reported decision does not state, nor is that fact here material. On appeal the superior court, Hartford County, Conn., affirmed the order of the dental commission after determining that the commission was warranted in finding proven the grounds on which its action was based, and Reardon appealed to the Supreme Court of Errors, Connecticut.

In general, said the Supreme Court of Errors, the Connecticut dental practice act authorizes the institution of proceedings to suspend or revoke a license to practice dentistry on the written, verified accusation of any person if the commission deems that the charges, if true, will warrant the suspension or revocation of a license. The commission must then fix a time for a hearing on those charges, notify the accused dentist of the time so fixed, serve him with a copy of the charges and afford him at the hearing an opportunity to be heard in his own defense. If a member of the commission learns of any act of a licensee sufficient to justify, in his opinion, suspension or revocation of a license, he may notify the recorder of the commission and the recorder shall then investigate the facts complained of, reporting the results of his investigation to the commission. If the commission considers the charges sufficient, if true, to justify disciplinary proceedings, it shall direct the recorder to have served on the accused a written complaint of the acts alleged. The procedure in the resulting proceedings shall be as stated when charges are filed by persons other than members of the commission. It was clearly the intent of the legislature, continued the court, that the commission, in acting on the charges made against a licensed dentist, should proceed in a quasijudicial capacity, reaching its conclusion on the evidence produced before it. It was not within legislative contemplation that any of the commissioners, except the recorder, should personally investigate any charges and act on the basis of the information so secured. Such investigation might well lead them to approach the hearing with a preconceived idea of the guilt or innocence of the accused. The accused would, very likely, be placed in the position of having to overcome this preconception by the evidence he might produce. Moreover, such an investigation would be apt to result in a violation of that requirement of due process of law that one called on to answer shall be confronted with the evidence against him. It is true that the dental practice act does not fully carry out this conception of the duties of the commission because it does provide for an investigation by the recorder, and the recorder is a member of the commission. It is, however, clearly the intent of the legislature that the decision of the commission shall be reached on evidence produced at the hearing and contrary to that intent that it shall be based on information obtained, and submitted to the commission, by its members. In this case, the trial court found that at the hearings before the commission no oral evidence was produced other than the unsworn statements of the members of the commission.

The evidence showed that two members of the commission, not including the recorder, testified at length as to the results of their personal investigation concerning the facts complained of against the accused dentist. It appears that the members had discussed the matter among themselves before the hearing. Three members of the commission stated that before the hearing was held they had formed a definite opinion as to the guilt or innocence of the accused dentist and from answers given by those members of the commission to questions propounded by the dentist's attorney there is no doubt that the burden was placed on the accused dentist of overcoming the opinion they arrived at before the hearing. The very result which the legislature intended should not happen came to pass in this case. The accused dentist did not have such a hearing before the commission as the dental practice act contemplates, and the violation by the commission of proper procedure was so fundamental that, whether or not the accused dentist had been guilty of violating the prohibitions of the dental practice act, the trial court should have sustained his appeal.

In effect, then, the Supreme Court of Errors reversed the order of the commission suspending the dentist's license to practice.—*Reardon v. Dental Commission*, 20 A. (2d) 622 (Conn., 1941).

Society Proceedings

COMING MEETINGS

- American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 19-23. Dr. William P. Wherry, 107 South 17th St., Omaha, Executive Secretary.
- American Academy of Pediatrics, Boston, Oct. 8-11. Dr. Clifford G. Grulee, 636 Church St., Evanston, Ill., Secretary.
- American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hot Springs, Va., Sept. 11-13. Dr. James R. Bloss, 418 Eleventh St., Huntington, W. Va., Secretary.
- American Association of Railway Surgeons, Chicago, Sept. 8-10. Dr. Daniel B. Moss, 547 West Jackson Blvd., Chicago, Secretary.
- American Clinical and Climatological Association, Skytop, Pa., Oct. 16-18. Dr. Francis M. Rackemann, 263 Beacon St., Boston, Secretary.
- American Hospital Association, Atlantic City, N. J., Sept. 15-19. Dr. Bert W. Caldwell, 18 East Division St., Chicago, Executive Secretary.
- American Public Health Association, Atlantic City, N. J., Oct. 14-17. Dr. Reginald M. Atwater, 50 West 50th St., New York, Executive Secretary.
- American Roentgen Ray Society, Cincinnati, Sept. 23-26. Dr. Carleton B. Peetee, Royal Victoria Hospital, Montreal, Canada, Secretary.
- Association of Military Surgeons of the United States, Louisville, Ky., Oct. 29-Nov. 1. Colonel James M. Phalen, Army Medical Museum, Washington, D. C., Secretary.
- Central Association of Obstetricians and Gynecologists, New Orleans, Oct. 2-4. Dr. William F. Mengert, 515 Newton Road, Iowa City, Secretary.
- Clinical Orthopaedic Society, Cleveland and Akron, Ohio, Oct. 3-4. Dr. Myron O. Henry, 825 Nicollet Ave., Minneapolis, Secretary.
- Colorado State Medical Society, Estes Park, Sept. 17-20. Mr. Harvey T. Sethman, 537 Republic Bldg., Denver, Executive Secretary.
- Delaware Medical Society of, Wilmington, Oct. 7-8. Dr. C. L. Munson, 1015 Washington St., Wilmington, Secretary.
- District of Columbia Medical Society of the, Washington, Sept. 30-Oct. 2. Mr. Theodore Wiprud, 1718 M Street N.W., Washington, Secretary.
- Indiana State Medical Association, Indianapolis, Sept. 23-25. Mr. Thomas A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.
- Kentucky State Medical Association, Louisville, Sept. 29-Oct. 3. Dr. Arthur T. McCormack, 620 South Third St., Louisville, Secretary.
- Michigan State Medical Society, Grand Rapids, Sept. 16-19. Dr. L. Fernald Foster, 2020 Olds Tower, Lansing, Secretary.
- Mississippi Valley Medical Society, Cedar Rapids, Iowa, Oct. 1-3. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.
- Nevada State Medical Association, Elko, Sept. 26-27. Dr. Horace J. Brown, P. O. Box 698, Reno, Secretary.
- Omaha Mid-West Clinical Society, Omaha, Oct. 27-31. Dr. J. D. McCarthy, 1036 Medical Arts Bldg., Omaha, Secretary.
- Pacific Association of Railway Surgeons, Salt Lake City, Sept. 12-13. Dr. W. T. Cummins, 1400 Fell St., San Francisco, Secretary.
- Pennsylvania Medical Society of the State of, Pittsburgh, Oct. 6-9. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.
- Tri-State Medical Society of Texas, Louisiana and Arkansas, Texarkana, Sept. 23-24. Dr. William Hibbits, 209 Pine St., Texarkana, Tex., Secretary.
- Vermont State Medical Society, Burlington, Oct. 2-3. Dr. Benjamin F. Cook, 154 Bellevue Ave., Rutland, Secretary.
- Virginia Medical Society of, Virginia Beach, Oct. 6-8. Miss A. V. Edwards, 1200 East Clay St., Richmond, Secretary.
- Wisconsin State Medical Society of, Madison, Sept. 10-12. Mr. G. B. Larson, 110 East Main St., Madison, Acting Secretary.

Current Medical Literature

AMERICAN

The Association Library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1931 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

21:689-848 (June) 1941

- *Association of Gallbladder Disease and of Peptic Ulcer with Coronary Disease: Postmortem Study. B. J. Walsh, E. F. Bland, A. C. Taquini and P. D. White, Boston.—p. 689.
- Common Electrocardiographic Variant Following Acute Myocardial Infarction—The Tn Type. H. B. Weinberg and L. N. Katz, Chicago.—p. 699.
- Mural Thrombi in Heart. C. F. Garfin, Cleveland.—p. 713.
- Therapeutic Venous Occlusion. R. R. Linton, P. J. Morrison, H. Ulfelder and A. L. Libby, Boston.—p. 721.
- *Studies on Peripheral Blood Flow. E. J. Baldes, J. F. Herrick, H. E. Essex and F. C. Mann, Rochester, Minn.—p. 743.
- *Vasodilating Action of Various Therapeutic Procedures Which Are Used in Treatment of Peripheral Vascular Disease: Plethysmographic Study. D. I. Abramson, Cincinnati; H. Zazeela, New York, and N. Schikloven, Cincinnati.—p. 756.
- Venous Stasis in Coronary Circulation: Experimental Study. C. S. Beck and A. E. Mako, Cleveland.—p. 767.
- Significance of Diagnostic Tests in Study of Peripheral Vascular Disease. H. Montgomery, M. Naide and N. E. Freeman, Philadelphia.—p. 780.

Gallbladder Disease, Peptic Ulcer and Coronary Disease.—Walsh and his associates examined the protocols of 2,737 complete necropsies of persons 20 or more years of age. There were 576 patients with atherosclerosis of the coronary arteries of sufficient degree to be considered grossly abnormal. There were 456 patients with structurally abnormal gallbladders. In 122 instances coronary disease and gallbladder disease were observed in the same person. Peptic ulcer was present in 149. It is apparent that gallbladder disease occurred almost twice as often in patients with coronary disease as in those with normal coronary arteries. Some factor or factors related, in part at least, to an aging process not yet elucidated are apparently responsible for this finding. There was no significant association of peptic ulcer and coronary disease. In contrast to the structural alterations produced in the gallbladder, the upper part of the intestinal tract and the coronary arteries of animals no conclusive evidence of a comparable association in man was apparent from the present study.

Peripheral Blood Flow.—Using a thermotromuhr, Baldes and his co-workers measured the flow of blood in large arteries or veins of the peripheral vascular system of a trained dog. The data presented emphasize the fact that the blood flow to an extremity is influenced by many factors, any one of which, if altered, may profoundly increase or decrease the flow of blood to that region. Some of the factors that increase the flow are thyrotoxicosis, ingestion of food and exercise. Reduction in the size of the lumen of an artery reduces blood flow. Epinephrine may increase, decrease or cause no significant change, according to the resultant effect of the various factors controlling blood flow. The change in blood flow due to epinephrine is transient. Pitressin subcutaneously or intramuscularly exerts no significant effect on the blood flow. If it is administered intravenously the effect on every blood vessel studied thus far is a decided decrease in flow. The flow in the femoral artery or vein decreases as much as 90 per cent and remains decreased for several minutes, when 1 pressor unit of pitressin is injected intravenously.

Peripheral Vascular Disease.—Abramson and his associates investigated some of the vasodilating drugs commonly used in the treatment of peripheral vascular disease by means of the venous occlusion plethysmographic method. Blood flow measurements were performed on 31 patients with various types

of peripheral vascular disease (chiefly thromboangiitis obliterans and Raynaud's disease), 13 with various mental states and 34 normal subjects. A single administration of calcium gluconate, a deproteinized pancreatic extract (Padutin), papaverine, a preparation containing pantopon and atropine (spasmalgin) and thiamine hydrochloride produced slight or no increases in the blood flow to the hand, forearm, leg and foot. Alcohol, stilbestrol and histamine generally increased the blood flow to the hand but not to any other portions of the extremities. Hypertonic solution of sodium chloride augmented the flow to the hand, leg and foot in only one third of the trials. The intermittent application of a venous occlusion pressure for from two to three hours did not result in a significant increase in peripheral blood flow. The commonly employed clinical methods (the skin temperature thermometer and the oscillogmeter) do not necessarily reflect or parallel changes in total blood flow to an extremity.

American J. Obstetrics and Gynecology, St. Louis

41:915-1110 (June) 1941. Partial Index

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- Prevention of Asphyxia Neonatorum: Study of Etiologic Factors Observed in 2,000 Consecutive Deliveries. C. J. Lund, Madison, Wis.—p. 934.
- *Value of Calcium in Labor and in Uterine Inertia. G. D. Patton and R. D. Mussey, Rochester, Minn.—p. 948.
- Use of Synthetic Vitamin E in Treatment of Abortion. S. Lubin and R. Waltman, Brooklyn.—p. 960.
- Attempt at Endocrine Correlation and Therapy in 125 Cases of Menstrual Disorders. H. I. Segal, A. Steinberg, F. R. Schechter, N. H. Colton and N. Pastor, Philadelphia.—p. 979.
- *Treatment of Abnormal Uterine Bleeding with Androgens: Therapeutic Evaluation of Testosterone Propionate, Methyl Testosterone, Ethinyl Testosterone and Androgen Implantation. U. J. Salmon, S. H. Geist, J. A. Gaines and R. I. Walter, New York.—p. 991.
- Clinical Study of Estrogenic Therapy with Pellet Implantation. D. R. Mishell, Newark, N. J.—p. 1009.
- Clinical Experiments with Diethylstilbestrol: II. Treatment of Uterine Bleeding. A. Palmer, San Francisco.—p. 1018.
- Psychogenic and Somatogenic Factors in Flushes of Surgical Menopause. S. R. M. Reynolds, S. Kaminester, Frances I. Foster and S. Schloss, Brooklyn.—p. 1022.
- Sterilization by Means of Peritoneoscopic Tubal Fulguration: Preliminary Report. F. H. Power and A. C. Barnes, Ann Arbor, Mich.—p. 1038.
- Studies in Pelvic Iontophoresis of Choline Compound: II. Preoperative Management of Uterine Myomas Complicated by Pelvic Infection: Report of Thirty-Nine Cases. C. A. Gordon and A. R. Rosenthal, Brooklyn.—p. 1043.
- Reliability of Fishberg Concentration Test in Normal Pregnancy and Puerperium. A. S. Velkoff and R. F. Mabon, Atlanta, Ga.—p. 1069.

Calcium in Labor and Uterine Inertia.—Patton and Mussey administered calcium gluconate salts intravenously to 26 women in labor to determine its effect on pain and on uterine contractility. The women were at or near term and were either in labor or were undergoing induction. No relief of labor pains followed the therapy; in many instances the intensity of the pain was increased. The effect on uterine contractions was one of stimulation. Twenty-four patients experienced an increase in the frequency of contractions and 15 an increase in the intensity of the contractions. The duration of each contraction was not greatly changed from that in average labor. In no case did tetanic spasm of the uterus occur. The administration of calcium is most useful in stimulating the uterus in the presence of inertia in the first or second stage of labor. It cannot be expected to overcome severe dystocia. Concomitant analgesic agents may defeat the purpose of calcium in some cases of uterine inertia. The calcium apparently has no ill effect on the newborn babies. It should not be administered if a drug of the digitalis group has already been given.

Androgens for Abnormal Uterine Bleeding.—Salmon and his colleagues used testosterone propionate in the treatment of 61 patients with menometrorrhagia. The diagnosis in 45 was functional bleeding, in 15 menometrorrhagia associated with uterine fibroids and in 1 adenomyosis of the uterus. Good primary therapeutic results were obtained in 97.7 per cent of the patients with functional bleeding. Apparent cures (follow-up varied from three to thirty-two months) were obtained in 66.6 per cent, moderate improvement in 26.6 per cent and failure in 6.8 per cent of these patients. The primary results of 87 per

cent of the patients with uterine fibroids were good, but when the treatment was discontinued the symptoms of 60 per cent recurred. Implants of crystals and pellets of testosterone and testosterone propionate gave unsatisfactory results. The symptoms of the patient with menorrhagia and adenomyosis were controlled while under treatment, but the excessive bleeding recurred after the testosterone was discontinued. The authors believe that the effect of androgens on the normal steroid sex hormone balance of the human female is achieved through a combination of three actions: (1) inhibition of the gonadotropic activity of the hypophysis which results in suppression of ovulation and estrogen formation, (2) inactivation of the estrogens (or nullification of their biologic effects) and (3) inhibition of the proliferative capacity of the endometrium. When administered in small doses which do not suppress menstruation, testosterone propionate produces a qualitatively similar, though less profound, effect. The conclusion seems warranted that, following the administration of testosterone, a readjustment occurs in the steroid sex hormone organization which results in the establishment of a normal pituitary-ovarian-uterine relationship. Depending on the dose administered, testosterone propionate tends to modify or nullify the action of the gynecogenic hormones. The authors conclude that the endogenous androgens of the human female perform a function which is analogous to the action of exogenous androgens (testosterone propionate).

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill. 45:801-952 (June) 1941

Carcinoma of Uterine Cervix Treated with 400 Kilovolt Roentgen Rays and Radium. J. T. Murphy and C. E. Hufford, Toledo, Ohio.—p. 801.

*Carcinoma of Cervix Uteri. Study of 727 Cases. H. G. F. Edwards, Shreveport, La.—p. 804.

Results in Treatment of Lymph Node Metastasis in Cancer of Cervix and Vulva. F. J. Taussig, St. Louis.—p. 813.

*Carcinoma of Cervix Uteri in Childhood and Adolescence. H. H. Bowing and J. A. L. McCullough, Rochester, Minn.—p. 819.

*Roentgen Irradiation of Cellulitis, Especially of Face and Neck. W. DeHollander, Springfield, Ill.—p. 831.

Roentgen Diagnosis of Nonopaque Foreign Body in Lower Respiratory Tract. A. E. Morrison, Marion, Ohio, and H. J. Walton, Baltimore.—p. 843.

Chylous Ascites: Roentgenologic Observations from Case in Infancy. G. M. Wyatt and R. E. Gross, Boston.—p. 848.

Osteogenesis Imperfecta. Report of Twelve Cases. L. K. Chont, Oklahoma City.—p. 850.

Congenital Hydrocephalus: Report of Two Cases. P. A. Robin, Hempstead, N. Y.—p. 862.

Cobra Venom in Relief of Pain Due to Cancer. P. J. Hodas and Rosalind S. Thorne, Philadelphia.—p. 866.

Advantages of Roentgenoscopy and Roentgenoscopic "Spot" Roentgenograms in Diagnosis of Early Pulmonary Tuberculosis. R. H. Stehm, Madison, Wis.—p. 871.

Method for Location and Measurement of Intrapulmonary Cavities and Foreign Bodies. J. E. Noll, Port Jervis, N. Y.—p. 881.

Effects of Roentgen Irradiation at Low Temperature on Skin of Young Rats. T. C. Evans, Iowa City.—p. 888.

Sensitometry of Roentgen Film and Interpretation of Sensitometric Data. G. C. Henny, Philadelphia.—p. 895.

Comparison of Certain Aspects of 200 and 400 Kilovolt Radiation. C. C. McClure, Nashville, Tenn.—p. 909.

Method of Simplified Depth Dosage Calculation for Clinical Purposes. G. E. Roth, Christchurch, New Zealand.—p. 915.

Carcinoma of Cervix Uteri.—Edwards presents an analysis of 727 cases of cancer of the cervix seen during eight years; 265 patients were white and 462 Negroes. Biopsies were carried out on all but 26. Of the cancers, 670 were epidermoid carcinomas; 435 were of grade 2, 172 of grade 3, 21 of grade 4 and 42 were not graded. There were 31 patients with adenocarcinoma. In 75 per cent of the total the disease was in an advanced stage. In treatment dependence was placed on intensive, protracted, high voltage roentgen therapy. Less than half of the patients received radium therapy in addition. Thirty-eight, or 20.1 per cent, of the 189 patients treated in 1932, 1933 and 1934 were living on April 30, 1940. Of the 39 patients first seen in 1932 5, or 12.56 per cent, were alive at this time; of the 78 patients first seen in 1933 13, or 16.67 per cent, and of the 72 patients first seen in 1934 20, or 27.77 per cent, were living then. The author concludes that his data do not indicate that educational efforts are succeeding in causing patients to

come for treatment earlier. The signs of early cancer are objective, and early diagnosis can be made only on vaginal examination by a physician trained to detect early cancer, aided by microscopic study, at a time when the patient does not complain of any symptoms. He advocates semiannual examination of all women more than 35 years of age.

Carcinoma of Cervix Uteri in Childhood and Adolescence.—Bowing and McCullough point out that among 3,000 patients with malignant neoplasms of the uterine cervix referred to the Mayo Clinic only 1 instance of cancer in a patient less than 20 years of age was found. This occurred in a white girl of 13. The case emphasizes the need of making a careful manual and visual examination, as well as microscopic and pathologic examination of any tissue which may be at all suspicious. They believe that, because of the rarity of the disease among patients 20 or less years of age and of the difficulties encountered in making the diagnosis and the emphasis placed on the so-called cancer age, the diagnosis of cancer among young women is frequently confused or missed entirely. A search of the literature since 1862 revealed 25 cases of carcinoma of the uterine cervix in girls 20 years of age or younger. The authenticity of some of these cases appears doubtful, and in many there is no record of a corroborative microscopic examination. The tumor in the case reported was a stage 1 modified lesion, whereas in most cases of carcinoma of the cervix the lesions are in the inoperable stage when the patients are first seen. The response of the patient to radium therapy corresponded to that of patients who had a modified stage 1 lesion in the larger group of cases; all the patients in the latter group were alive five or more years after treatment. Individualization in the management of such patients is most imperative. The total dose of radium delivered was 676 millieurie hours. No apparent systemic effect resulted from the irradiation. At the time of writing, more than six years from the time of the initial treatment, the patient is well, menstruation is normal and she is apparently free from malignant disease.

Roentgen Irradiation of Cellulitis.—DeHollander reports 18 cases of acute cellulitis of tissues surrounding the alveolar process. In 12 it followed the extraction of teeth and intraoral surgery. In 8 of these roentgen irradiation was begun by the third day of onset. The remaining 4 had first been treated by hot compresses and the like, and they had the cellulitis for from seven to fourteen days before roentgen irradiation was instituted. The response of both groups was satisfactory and resulted in cure of all but 1 patient. Cellulitis of the other 6 patients followed slight abrasions or lacerations to the skin of the chin, face, eye, neck or ear or after an infected area was opened. Response to irradiation by all the 18 patients began within twenty-four hours. The patient first experiences an increase in pain, which persists for from six to ten hours, and at times an elevation of temperature. In twenty-four hours relief of pain is usually remarkable. The patient who was not cured died of the infection and complications. The amount of swelling decreases noticeably in from twenty-four to forty-eight hours. With this decrease the patient begins to feel an improvement and there is less toxicity. The swelling is not always absorbed. Absorption without suppuration occurred in only 7 patients; in 10 fluctuation occurred and opened spontaneously or was incised. It is best to treat the entire area at one time, but if the area of cellulitis is larger than 20 by 20 cm. it must be divided into two parts. When dealing with a cellulitis of the face or neck it may often be necessary to treat both sides. The initial dose is approximately three fourths of a skin erythema dose. This is given in an attempt to destroy as many of the invading leukocytes as possible and liberate the greatest amount of protective substance. The author has given his patients an initial dose of 289 roentgens. After forty-eight hours he again treated the area of cellulitis but this time the dose was reduced to 193 roentgens, or about one half of a skin erythema dose. The total dose is given within forty-eight hours, and not less than thirty-six hours should elapse between doses.

Anesthesiology, New York

2:369-488 (July) 1941

- Regional Block Anesthesia for Operations on Perineum, Anus, Genitalia and Lower Extremities. E. B. Tuohy, Rochester, Minn.—p. 369.
- Hepatorenal Syndrome Following Administration of Vinethene: Case Report. M. H. Hawk, O. S. Orth and F. J. Pohle, Madison, Wis.—p. 388.
- Unsaturated Monohalogenated Hydrocarbons as General Anesthetic Agents. B. E. Abreu, Oklahoma City.—p. 393.
- Technical Development of Gas Anesthesia. A. H. Miller, Providence, R. I.—p. 398.
- Survival of Hypothermia by Dog. L. M. Woodruff, New Haven, Conn.—p. 410.
- Physiologically Controlled Oxygen Mask Apparatus. A. L. Barach and M. Eekman, New York.—p. 421.
- Combined Action of Morphine and Central Stimulants and Its Relation to Treatment of Morphine Poisoning. L. W. Hazleton and T. Koppanyi, Washington, D. C.—p. 427.
- First Anesthesia Death with Some Remarks Suggested by It on Fields of Laboratory and Clinic in Appraisal of New Anesthetic Agents. H. K. Beecher, Boston.—p. 443.
- Study of Carbon Dioxide Absorption Appliances for Anesthesia: The Canister. J. Adriani and Mary Lou Byrd, New York.—p. 450.
- Determination of Dosage-Mortality Ratio of Pentothal Sodium with Toxic Doses of Sulfanilamide Following. P. H. Lorhan, Gretchen Guernsey and A. E. Pugh, Kansas City, Kan.—p. 456.

Annals of Surgery, Philadelphia

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- Mars and Aesculapius. D. Cheever, Boston.—p. 881.
- Surgical Problems of the War. L. R. Broster, London, England.—p. 891.
- Surgery of Air Raid Casualties. D. N. Matthews, London, England.—p. 910.
- Treatment of Compound Fractures Resulting from Enemy Action. P. D. Wilson, New York.—p. 915.
- Experience of Canadian Army and Pensions Board with Amputations of Lower Extremity. W. E. Gallie, Toronto, Canada.—p. 925.
- Minor Causalgia Following Injuries and Wounds. J. Homans, Boston.—p. 932.
- Present Day Treatment of Compound Fractures. R. H. Kennedy, New York.—p. 942.
- *Use of Adrenal Cortical Extract in Treatment of Traumatic Shock of Burns. J. E. Rhoads, W. A. Wolff and W. E. Lee, Philadelphia.—p. 955.
- *Therapeutic Value of Preserved Blood Plasma: Summary of 110 Cases. E. B. Mahoney, H. D. Kingsley and J. W. Howland, Rochester, N. Y.—p. 969.
- *Bipp and Liquid Paraffin Treatment of War and Civilian Wounds. F. B. Gurd and L. H. McKim, Montreal, Canada.—p. 987.
- Emergency Treatment of War Injuries of Face and Jaws. R. H. Ivy and R. A. Stout, Toronto, Canada.—p. 1001.
- Medical Department in Naval Warfare. F. R. Hook, Washington, D. C.—p. 1010.
- Organization for Evacuation and Treatment of War Casualties. N. T. Kirk, Washington, D. C.—p. 1020.
- Skin Grafting and "Three Quarter" Thickness Skin Graft for Prevention and Correction of Cicatricial Formation. E. C. Padgett, Kansas City, Mo.—p. 1034.
- Treatment of Compound Injuries by Closed Plaster Encasement Method. D. B. Pfeiffer and C. M. Smyth Jr., Philadelphia.—p. 1050.

Adrenal Cortex Extract for Traumatic Shock of Burns.

—Rhoads and his colleagues endeavored to control quantitatively the fluid shift of burned patients by frequent serial hematocrit and plasma protein determinations and thus to calculate how large a plasma transfusion was required to restore these levels to normal. By giving large plasma transfusions at varying intervals after burns they found that about forty hours was required for the capillary walls to regain their normal state of permeability for proteins. To shorten this time they administered adrenal cortex extract to 26 patients with extensive burns. The burned area was debrided and tanned, and the patient placed under a thermoregulated cradle. Hematocrit and plasma protein levels were determined at intervals of six hours for forty-eight hours and less frequently thereafter. A continuous infusion of citrated blood plasma, diluted with an equal volume or more of 5 per cent dextrose in distilled water or with 0.85 per cent sodium chloride, was given in amounts to keep the hematocrit below 55 and the plasma protein level above 6 Gm. per hundred cubic centimeters. Adrenal cortex extract was started intravenously in 7 patients within a few hours of injury. The dosage varied from 5 to 10 cc. every six hours for adults, and in proportionate amounts for children. The plasma given 5 patients compared to the calculated plasma loss, and 2 received decidedly smaller amounts. Three of the 5 patients showed a sharp rise in the plasma volume between the eighteenth and thirtieth hours, with a normal or near normal level between the twenty-fourth and thirtieth hours; 1 showed

an early rise of 15 per cent, followed by a considerable "lag period," and 1 showed a definite rise from the eighteenth to the twenty-fourth hour. One patient showed no benefit and 1 showed fairly complete retention of the plasma after the twenty-fourth hour. The patient who failed to respond had several concomitant diseases. In comparing the curves of these 7 patients with the 19 who had comparable burns and who were similarly treated but received no cortex extract, it appears that in not 1 instance of the latter group was it possible to obtain a substantial rise in the plasma volume before the thirty-sixth hour without a rapid loss of protein. The volume of plasma of patients with burns involving less than 5 per cent of their body surface became normal only within forty-eight to seventy-two hours, for those with more than 10 per cent involvement the time ranged between four and six days, for those with 15 to 20 per cent involvement but given adequate transfusions of plasma the circulation was normal in less than fifty hours, and the time of those patients receiving adequate plasma and adrenal cortex extract was normal between the eighteenth and thirtieth hours. Adrenal cortex extract reduces the amount of plasma required to restore the circulation to normal, reduces the amount of plasma protein which enters the interstitial fluid and shortens the period of stagnant anoxia. A definite chloride retention occurs. None should be given these patients unless indicated by blood analysis.

Preserved Blood Plasma.—Mahoney and his co-workers have dried plasma successfully with an apparatus built in their laboratory, based on the lyophile method. Plasma need not be preserved in the dry form for use. Wet plasma may be safely stored under sterile conditions at 4 C. for from three to four months. However, dried plasma deteriorates slowly, it requires no refrigeration for storage, it may be stored indefinitely, it is easily transported and it dissolves readily in a concentrated solution. Plasma has a far greater field of usefulness than serum in the treatment of emergency shock. They have given three hundred and forty plasma transfusions to 110 patients. One patient was given forty-five transfusions. The maximal amount injected at any one time was 800 cc. There were twelve mild and transient reactions; 9 of the patients had a chill followed by fever and 3 had transient urticaria. The plasma has been most useful in restoring a failing circulation and in combating shock from operations, burns, trauma and hemorrhage. Lyophile plasma (dried within a few hours after its collection) was effectively used in treating hemorrhagic disease of 4 newborn infants. The following are a few precautions in administering plasma: 1. Wet plasma should not be heated above 37 C. prior to injection. 2. Dried plasma should never be regenerated with Ringer's solution. 3. Plasma should be injected slowly and preferably by the drip method. 4. Transfusions of whole blood should not follow pooled plasma immediately, as heterogenous agglutinins may cause severe reactions. If imperative, type O blood should be used. 5. Plasma showing excessive hemolysis should be discarded.

Bipp and Liquid Petrolatum Treatment for Wounds.

—Gurd and McKim discuss the use of bipp (one part of bismuth subnitrate, one part of iodoform powder and one part of liquid petrolatum) packing in the treatment of civilian and war wounds. They present illustrative cases of suppurating phlegmonous lesions of the hand, lacerated contaminated wounds of the leg and pulmonary abscesses. The advantages of bipp and liquid petrolatum pack treatment are relief of pain, stimulation of a healthy reaction on the part of the tissues, control of the original infection and the fact that usually dressings need to be changed only in from three to six weeks, thus lessening infection. Such wounds are not malodorous. The employment of the bipp-liquid petrolatum technic is specifically recommended for (1) acute traumatic lesions whether due to gunshot wounds, automobile injuries or construction accidents associated with potential infection and particularly with compound fractures, (2) infected wounds resulting from untreated trauma or suppurating or phlegmonous wounds from other causes and (3) as a prophylactic measure against infection of the wall of the body when certain infected cavities, such as abdominal abscesses (appendical or otherwise), empyema or lung abscesses are opened, and when operating on the mastoid or other deep-seated abscesses.

Archives of Internal Medicine, Chicago

67:1099-1302 (June) 1941

- Fulminating Bacillus Coli Septicemia in Women with Diabetes: Report of Four Cases, with Special Reference to Clinical Diagnosis. B. D. Bowen and E. Witebsky, Buffalo.—p. 1099.
- Pulmonary Stenosis with Bundle Branch Block: Report of Case with Sound Tracings and Semiserial Studies of Conduction Bundle. L. M. Blackford and F. P. Parker, Atlanta, Ga.—p. 1107.
- Syndrome of Destruction of Pinal Gland: Experimental and Clinical Observations. J. Martin and L. Davis, Chicago.—p. 1119.
- Vital Capacity of Lungs in Middle Age: Results of Periodic Examinations of Men of Sedentary Occupation. J. H. Arnett, Philadelphia.—p. 1129.
- Effect of Uremic Serum and Urine on Growth of Fibroblasts in Vitro. M. Rachmilewitz, with assistance of E. Nussbaum, Jerusalem, Palestine.—p. 1132.
- Infarction of Lung: Clinical and Roentgenologic Study. G. R. Krause and E. M. Chester, Cleveland.—p. 1144.
- Cold Pressor and Breath Holding Test: Analysis of Results in 200 Subjects. R. H. Feldt and D. E. W. Wenstrand, Milwaukee.—p. 1157.
- Thrombosis of Common, Internal and External Carotid Arteries: Report of Two Cases with Review of Literature. M. Galdston, S. Govons, S. B. Wortis, J. M. Steele and H. K. Taylor, New York.—p. 1162.
- Blood: Review of Recent Literature. S. M. Goldhamer, C. C. Sturgis and F. H. Bethell, Ann Arbor, Mich.—p. 1177.

Archives of Neurology and Psychiatry, Chicago

46:1-196 (July) 1941

- Multiple Degenerative Softening: Clinicopathologic Report of Three Cases. G. B. Hassin and T. T. Stone, Chicago.—p. 1.
- Dietetic and Related Studies on Multiple Sclerosis. R. M. Brickner and N. Q. Brill, with assistance of Frances N. Naylor and Kathryn Montgomery, New York.—p. 16.
- *Lindau-von Hippel Disease: Report of Four Cases. W. M. Craig, H. P. Wagener and J. W. Kerrohan, Rochester, Minn.—p. 36.
- Incidence and Cause of Death in Shock Therapy. J. L. Kinsey, Milwaukee.—p. 55.
- Multiple Primary Tumors of Spinal Cord. B. W. Lichtenstein, Chicago.—p. 59.
- Cerebrospinal Fluid Dynamics in Man. E. Roseman, M. Rosenbaum, C. D. Aring and E. B. Ferris Jr., Cincinnati.—p. 72.
- Prevention of Traumatic Complications in Convulsive Shock Therapy by Magnesium Sulfate. H. E. Yaskin, Philadelphia.—p. 81.
- Prognostic Value of Intravenous Administration of Sodium Amytal in Cases of Schizophrenia. J. S. Gottlieb and J. M. Hope, Iowa City.—p. 86.
- Histogenesis of Senile Plaques. T. L. L. Soniat, Rochester, Minn.—p. 101.
- Occlusion of Superior Cerebellar Artery: Report of Case with Necropsy. W. Freeman and D. Jaffe, Washington, D. C.—p. 115.

Lindau-von Hippel Disease.—Craig and his associates describe 4 cases of hemangioblastoma of the cerebellum associated with angiomatous lesions of the retina. Surgical intervention was made in all 4, resulting in the death of 1 patient twelve hours after the operation. The presence of multiple pathologic lesions doomed any form of treatment to failure in this case. The fatal case was a classic example of the Lindau-von Hippel syndrome except for the presence of a cyst in the cerebellar hemangioblastoma. In this case were also seen two hemangioblastomas without lipid-containing cells. The surgical procedure employed in the other 3 cases was the more or less standardized drainage of the cystic cavities, removal of the tumorous nodule and removal of the wall of the cyst. The post-operative results were excellent and functional recovery was remarkable. From the ophthalmoscopic point of view these 4 patients presented four distinct phases of the disease. The authors state that the terminology "Lindau-Collins" would have been just as good as the one selected as a title, since Collins was the first to describe retinal angiomas.

Archives of Ophthalmology, Chicago

25:941-1108 (June) 1941

- Bullous Keratitis, with Particular Reference to Pathology of Experimental Corneal Vesicularity. D. G. Cogan, Boston.—p. 941.
- Rhinospiridium Seebert Infection in Eye. N. B. Elles, Houston, Texas.—p. 969.
- Exfoliation of Lens Capsule (Glaucoma Capsulare): Report of Two Cases Bearing on Etiology, Nature and Significance of Condition. R. Irvine, Los Angeles.—p. 992.
- Bilateral Glaucoma Associated with Unilateral Naevus Flammeus: Report of Case. L. H. Ehrlich, New York.—p. 1002.
- Fluorescence Microscopy Applied to Ocular Tissues. J. N. Evans and E. Singer, Brooklyn.—p. 1097.
- Optic Neuritis Caused by Coal Tar Hair Dye. M. Keschner and V. H. Rosen, New York.—p. 1020.
- Penetration of Sulfanilamide and Its Derivatives into Aqueous Humor of Eye. H. G. Scheie and B. F. Souders, Philadelphia.—p. 1025.
- Simulated Blindness. M. A. Lasky, Brooklyn.—p. 1038.

Arkansas Medical Society Journal, Fort Smith

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- The Future of Organized Medicine in Arkansas. H. T. Smith, McGehee.—p. 1.
- Conservative Rhinology. P. L. Mahoney, Little Rock.—p. 2.

Canadian Medical Association Journal, Montreal

44:547-648 (June) 1941

- Isinglass as Transfusion Fluid in Hemorrhage. N. B. Taylor and E. T. Waters, Toronto.—p. 547.
- Uterosalpingography. L. Gérin-Lajoie, Montreal.—p. 555.
- Plastic Repair of Deformities of Eyelids. A. L. Morgan, Toronto.—p. 560.
- Interpretation of Acute Abdominal Pain. W. F. Gillespie, Edmonton, Alta.—p. 562.
- Subtotal Gastrectomy for Gastroduodenal Ulcer. G. G. Miller, Montreal.—p. 570.
- Role of Corpus Luteum in Toxemia of Pregnancy. J. E. Ayre, Montreal.—p. 575.
- Recognition and Treatment of Addison's Disease. R. A. Cleghorn, Toronto.—p. 581.
- Retinopathy in Diabetics. G. White and C. E. A. Hassard, Toronto.—p. 586.
- Ocular Manifestations of Vitamin A Deficiency. P. R. McDonald, Philadelphia.—p. 589.
- Sulfanilamide per Rectum. E. H. Wood, Ottawa, Ont.—p. 592.
- Sympathetic Blockade in Peripheral Vascular Accidents. N. W. Roome, London, Ont.—p. 594.
- Pituitacosis: Case. D. J. Prendergast and W. B. Phair, Toronto.—p. 597.
- Psychology of General Public with Regard to Acne Vulgaris. W. Marshall, Appleton, Wis.—p. 599.
- Tumors of Monozygous and Dizygous Twins: Report of Nineteen New Cases. Madge Thurlow Macklin, London, Ont.—p. 604.

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- Cardiac Neuroses. J. A. Oille, Toronto.—p. 1.
- Experiences with Stored Blood and the Blood Bank. G. Shanks, Toronto.—p. 7.
- Ideal Result in Pulmonary Tuberculosis: Thirty Cases of Complete Resolution. W. Ogden, Toronto.—p. 10.
- Vestibular Function and Flyers. K. Fuchs, Edmonton, Alta.—p. 15.
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- Chemotherapy in Pneumonia Cases Treated by Private Practitioners. W. B. McClure, Toronto.—p. 26.
- Gallbladder Problem in General Practice: Brief General Discussion. D. Macdonald, St. Catharines, Ont.—p. 29.
- *Phantom Limb. A. A. Bailey and F. P. Moersch, Rochester, Minn.—p. 37.
- Analysis of Published Statistics in Connection with Mammary Cancer. A. D. Irvine, Edmonton, Alta.—p. 42.
- Normal and Pathologic Vitreous Humor. T. H. Hodgson, Toronto.—p. 47.
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- Retroperitoneal Pneumography. N. W. Roome, London, Ont.—p. 56.
- Successful Removal of Carcinoma on Head of Pancreas. J. C. Luke, Montreal.—p. 59.
- Aneurysms of Pulmonary Artery: Case Report. L. J. Breslin, L. J. Solway and D. Eisen, Toronto.—p. 61.
- Auricular Paroxysmal Tachycardia in Infancy (First Year): Report of Case of Atrioventricular Rhythm. H. N. Segall and A. Goldbloom, Montreal.—p. 64.
- Congenital Absence of Vagina. M. C. Watson, Toronto.—p. 69.

Phantom Limb.—According to Bailey and Moersch, "phantom limb" occurs in most cases of upper and lower limb amputation, but only a small number of persons presenting the syndrome are actually incapacitated in any way. Pain, however, may lead occasionally to drug addiction or suicide. The authors' observations are based on the clinical study of 105 patients, 55 of whom (group 1) sought relief of pain at the Mayo Clinic; 50 (group 2) had their amputations at this clinic and were followed up. In both of these groups there were only 17 female subjects. Total phantom limb incidence amounted to 90.5 per cent; the lower limb syndrome occurred more frequently (57 cases) than the upper limb (48 cases). The most common causes of amputation were traumas (56) and vascular diseases (28). In group 1 the syndrome had occurred in 42 immediately after the amputation; in the remaining 13, between less than one month to more than one year, mostly within five years. In many cases the lost limb sensation had been felt intermittently from twelve to twenty-nine years before distressing symptoms occurred. In the majority of cases the average time since the operation was less than five years, illustrating how rapidly pain becomes a real problem. Pain is usually described as of a burning, aching or cramping nature; many patients variously described it as a *crushing, twisting,*

grinding, tingling, tearing or drawing sensation. In most cases the stump was the site of some distress. Aggravation due to climatic changes is not regarded as of particular significance. Fifteen different types of treatment had been employed, either at the clinic or before the patients came to the clinic, but gave only temporary relief. In most cases the treatment was mainly, if not exclusively, surgical. 15 were operated on once, 28 once or oftener, and 15 were treated conservatively. Some aspects of the phantom limb problem defy explanation on the basis of any single theory. The syndrome seems to be of a central (intracranial) origin, most probably psychic, and may constitute a form of obsession neurosis. General measures of a psychotherapeutic nature should be instituted immediately after the operation. The clinical entity of phantom limb cannot be doubted. The treatment is still unsatisfactory.

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Chemotherapy of Giardia Infections.—Culbertson's first patient was a woman of 25 whose infection had been first diagnosed six years earlier. At irregular intervals thereafter parasites or cysts were found in her stools. An ineffectual attempt was made in 1936 to eliminate the parasites by administering carbarson. Thereafter cysts were believed reduced in number for a time, but they never disappeared entirely and after treatment was discontinued they again became numerous. Many cysts were observed in January 1940, one day prior to treatment with atabrine. Atabrine treatment consisted of two 0.1 Gm. tablets daily for five days. A stool specimen obtained two days after the last day of treatment was negative for cysts and trophozoites of *Giardia lamblia*. Stools obtained one, two, four and six weeks later were likewise negative. No pigmentation of the skin was observed at any time. The second patient, a man, was also treated successfully with atabrine. A stool examined just prior to treatment contained many cysts of *Giardia lamblia*. Two 0.1 Gm tablets of atabrine were given daily for five days. Examination of stools obtained on three successive days after the last day of treatment revealed neither cysts nor trophozoites. Neither atabrine nor acriflavine in the doses given was effective in eliminating infections with *Trichomonas inuris*, *Trichomonas parva*, *Chilomastix bettencourti*, *Hexamita muris* or *Endamoeba muris* from the albino rat.

Blood Preservation.—Drew and Scudder present the following changes as typical of a large number of observations on citrated blood: 1. In citrated blood there is some loss in the number of erythrocytes beginning about the fifteenth day and amounting to from one to one and a half million cells by the end of the month. 2. The hemoglobin content remains constant

in the total sample, although from 15 to 25 per cent may diffuse out of the cells into the plasma in one month. 3. The polymorphonuclear leukocytes are diminished to 50 per cent in forty-eight hours and are amorphous masses in fifteen days. 4. The lymphocytes and eosinophils do not disintegrate so rapidly; the latter are particularly well preserved. The monocytes are difficult to trace. 5. The platelets fall rapidly to a level ranging from 50,000 to 80,000 and remain at this level for about fifteen days and then become difficult to count. 6. The fragility of red blood cells slowly increases with increasing age; exact curves are difficult to establish. 7. The prothrombin level is maintained above 40 per cent of normal concentration for at least four months. The use of old brain extract will cause clotting times that are too rapid, giving a false picture of the true degree of efficacy of preserved blood in the therapy of hemorrhagic diseases associated with low prothrombin concentrations.

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- Relation of Macronucleolus and Nucleonucleolar Ratio of Cancer to Histologic Grading. A. E. Mendes Ferreira, Rochester, Minn.—p 1612
- *Toxic Reactions with Gold Salts in Treatment of Rheumatoid Arthritis. R. M. Lintz, New York—p 1629

Chrysotherapy in Rheumatoid Arthritis.—According to Lintz, gold salt therapy in rheumatoid arthritis is attended with certain risks. The first manifestations of toxic reaction may consist in exacerbations of articular symptoms, in lesions of the skin, mouth, gastrointestinal tract, liver, kidneys, vasomotor apparatus or of the hemopoietic system. Reactions may appear any time between the time of the first injection and several months later. Fatalities have been reported after exfoliative dermatitis, acute yellow atrophy of the liver and blood dyscrasias. Suggested methods of preventing or controlling reactions have not proved successful. Chrysotherapy is contraindicated for patients with hepatic or renal involvement or those of the hemopoietic system. Treatment should be discontinued at the first sign of any toxic reaction and may be resumed when the signs have cleared, except in cases in which exfoliative dermatitis, blood dyscrasias or severe hepatic and renal lesions exist.

Journal of Nat. Cancer Inst., Washington, D. C.

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- Dangers of Radiation Without Biopsy of Brain Tumors in Children: Report of Case. F. D. Ingraham and J. B. Campbell, Boston.—p. 925.
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- *Equine Encephalomyelitis in Massachusetts: Analysis of the 1938 Outbreak, Follow-Up of Cases and Report of a Mosquito Survey. V. A. Getting, Boston.—p. 999.
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Equine Encephalomyelitis.—From an analysis of 34 certain cases of equine encephalomyelitis due to the eastern variety of virus that occurred in southeastern Massachusetts during an epidemic of the disease in horses, Getting observed permanent sequelae (mental retardation, hemiparesis, aphasia and emotional instability) in 6 of the 9 surviving patients. Approximately 70 per cent of the cases were among infants and children less than 10 years of age. The 9 surviving patients, in whose blood neutralizing antibodies to the virus were found, were seen at varying intervals from the date of the original illness. It is impossible to prognosticate the eventual course of the residual sequelae. It seems that they are permanent and may even be progressive. As soon as the true nature of the equine encephalomyelitis outbreak was realized, a mosquito survey was under-

taken. In all, fifty-six different species of mosquitoes were collected and of them thirty-seven were of the biting and the remainder of the nonbiting kind. Only six of the biting species have been shown experimentally to transmit the eastern virus of equine encephalomyelitis to laboratory animals. There were three salt marsh species—*Aedes cantator*, *Aedes sollicitans* and *Aedes taeniorhynchus*—and three fresh water species—*Aedes atropalpus*, *Aedes triseriatus* and *Aedes vexans*. The former are usually limited to within 10 miles of salt water. Two of the fresh water vectors, *Aedes triseriatus* and *Aedes vexans*, were statewide, the latter being from five to fifteen times as prevalent as the former. *Aedes vexans* is probably the most important vector of equine encephalomyelitis in Massachusetts. The epidemiologic and entomologic data support the laboratory evidence that equine encephalomyelitis is transmitted by mosquitoes, since the geographic distribution and the seasonal prevalence of the disease and the vectors have been found to be the same. The biting habits of the vectors suggest that the hazard of outdoor exposure of man and animals to the mosquitoes is ten times as great as it is of those in buildings. Thus the high incidence among the young may be explained, as during the summer infants and children often sleep outdoors, sometimes without protective netting. Moreover, children less than 10 years of age who play outdoors the greater part of the day are less efficient than older groups in protecting themselves against mosquitoes, since they do not react to the buzzing and alighting of a mosquito but only when bitten. Of the mosquitoes captured on man outdoors 60 per cent were vectors, as compared to only 6 per cent of those caught indoors.

New Orleans Medical and Surgical Journal

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New York State Journal of Medicine, New York

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Ohio State Medical Journal, Columbus

37:409-512 (May) 1941

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Pennsylvania Medical Journal, Harrisburg

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- Functions and Accomplishments of Your Child Health Committee. F. T. O'Donnell, Wilkes-Barre.—p. 820.
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- Various Organic Nervous Disorders Erroneously Diagnosed Anterior Poliomyelitis. A. Silverstein and P. F. Lucchesi, Philadelphia.—p. 877.
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- Obstetric Significance of Anatomic Variations in Inlet of Female Pelvis. P. O. Klingensmith and R. P. Barden, Philadelphia.—p. 891.
- Progress Report of Division of Cancer Control, Pennsylvania State Department of Health. S. P. Reimann and R. S. Reeves, Philadelphia.—p. 896.
- Chemotherapy in Otolaryngology. J. W. Hampsey, Pittsburgh.—p. 900.

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- State Department of Public Assistance Medical Service. L. T. Buckman, Wilkes-Barre.—p. 971.
- Continuous Spinal Anesthesia: Observations on First 500 Cases. W. T. Lemmon and G. W. Paschal Jr., Philadelphia.—p. 975.
- Survey of Dysmenorrhea in Group of Student Nurses and Medical Treatment by Means of Benzedrine Sulfate. W. J. Larkin, Scranton.—p. 994.
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- *Congenital Anomalies (Nevi) and Their Relationship to Cancer and Melanoma. E. F. Traub, New York.—p. 1103.
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- Clinical Phases and Differential Diagnosis of Acne Vulgaris. R. J. Rickloff, Erie.—p. 1160.
- Role of Heredity in Acne Vulgaris. T. Butterworth, Reading.—p. 1162.
- Röntgen Ray Treatment of Acne Vulgaris. H. E. Twining, Philadelphia.—p. 1165.

Congenital Nevi, Cancer and Melanoma.—Traub recommends the following classification for nevi: (1) vascular nevi, which may be subdivided into flat, raised or deep nevus vasculosus, nevus lymphangiectodes, nevus vasculosus and lymphangiectodes, and heterogeneous vascular nevi; (2) pigmented,

hairy and/or warty nevi which consist of intraepidermal nevus, epidermodermal nevus (junction type nevus), which may terminate in melanoma (nevocarcinoma), intradermal nevus, which is always benign if of the pure type, blue nevus and the heterogeneous pigmented nevus or combination of two or more of the foregoing types, and (3) nevi of special tissue, that is, glandular, connective tissue nevus, fat tissue nevus—nevus lipomatodes, nerve nevus and the heterogeneous nevus. Most of the pigmented nevi fit readily into one of the first four subgroups. A few present difficulty in cataloguing, and a small number of mixed or combination types occur. The epidermodermal nevus is the forerunner of the melanoma. In the past, melanomas that were thought to have arisen from normal skin in all probability arose from a junction nevus that had suddenly appeared. For this reason, junction nevi that appear later in life should receive particular attention. Their prophylactic removal is advised, particularly when they appear suddenly in later life, when they occur in areas subject to trauma, when the lesions are borderline and when frequent observation is not possible. Because of the short interval between the time the patient or physician notices usual signs and symptoms (change in color, bleeding, ulceration, increased growth and the like), regarded as "early," and metastasis these criteria must in reality be put down as late signs. Most nevi apparently remain true to type as far as the author's microscopic studies of 400 specimens reveal. The changes that occur in their clinical appearance are either developmental or degenerative and do not indicate that an intradermal nevus is changing to a junction type. Any and every type of combination of mixed types of nevi is possible. All nevi, including the junction type, may be safely removed without wide excisions. When melanoma or squamous cell carcinoma is suspected or proved, radical removal and, if indicated, node dissection of the drainage area should be prompt. Biopsies, if followed immediately by the indicated treatment, may obviate unnecessary radical procedures. The clinical course of the lesion is important and serves to control errors in diagnosis from single cutaneous sections which may be confusing and at times difficult to interpret microscopically. The wounds of extensive excisions with the electric cutting current heal without grafting of skin.

Review of Gastroenterology, New York

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- Critical Analysis of Series of Appendectomized Patients. Z. Sagal and W. Heinemann, New York.—p. 204.
- Carcinoma of Tongue with Metastases to Lungs: Report of Two Cases. D. E. Ehrlich and S. D. Blum, New York.—p. 211.
- New Proctosigmoidoscopy: Review of the American Contribution to Development of These Instruments. M. Einhorn, New York.—p. 218.
- Acute Sigmoidorectal Intussusception: Report of Case in Infant, Reduced in Course of Proctosigmoidoscopy. I. Skir, Brooklyn.—p. 232.
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- Biliary Tract Surgery: Results in 215 Consecutive Cases from the Louisiana State University Surgical Service of the Charity Hospital at New Orleans. U. Maes and S. A. Romano, New Orleans.—p. 245.
- Biliary System: Liver, Gallbladder and Jaundice, Biblical and Talmudic Data. C. J. Brim, New York.—p. 255.

Rhode Island Medical Journal, Providence

24:75-102 (May) 1941

- Varicose Veins and Related Conditions: I. Modern Treatment of Varicose Veins. S. J. Goldowsky, Providence.—p. 75.
- Id.: II. Ulcers, Phlebitis and Thromboses. J. B. Sears, Boston.—p. 79.
- Bakelite Brains. M. Korb and C. A. McDonald, Providence.—p. 82.
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Southwestern Medicine, El Paso, Texas

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- Treatment of Acute Respiratory Infections with Oral Coryza Antigen: Preliminary Report. M. R. Palmer and J. E. Audes, Tucson, Ariz.—p. 144.
- Leiboff Test: Comparison with Hinton, Kahn, Kline and Mazzini Tests. R. A. Greene and E. L. Breazeale, Tucson, Ariz.—p. 148.
- Tests for Serum Sensitivity. J. D. LeMar, Omaha.—p. 149.

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- Sonic Pulmonary Problems Related to Anesthesia. L. H. Mousel and J. S. Lundy, Rochester, Minn.—p. 166.
- *Spider Bite: Specific Treatment of That Caused by Black Widow. Z. B. Noon, Nogales, Ariz., and W. L. Minear, Patagonia, Ariz.—p. 169.
- Industrial Surgery Practice in Arizona. E. C. Houle, Nogales, Ariz.—p. 176.
- Herpes of Bladder, Without Accompanying Cutaneous Lesions. J. R. Rinker, Fort Worth, Texas.—p. 180.

Spider Bite.—Noon and Minear used specific antivenin (*Latrodectus mactans*) for the treatment of 6 cases of arachnoidism. The series is small for definite conclusions, but certain points are obvious. The greatly reduced morbidity of patients treated with antivenin is obvious when compared to those receiving nonspecific therapy. In 1 of their patients receiving both nonspecific and specific treatment, they feel that the tremendous reduction of morbidity was due to the antivenin. It has been their experience that when antivenin is given before symptoms are severe and definitely established the morbidity is practically nil. When the symptoms are severe and several hours have elapsed before antivenin therapy is instituted, the final curative effect is delayed in proportion to the time of the spider bite and the severity of symptoms at the time of treatment. It seems possible that more prompt relief would result by giving twice the usual dose of antivenin in the severe cases when much time has elapsed after the bite and the institution of treatment. In 2 of the authors' patients treated with antivenin a delayed serum reaction, hives, developed. Their duration was forty-eight hours. They believe that antivenin therapy should also prove of value in reducing the mortality, especially in the very young and the very old patients.

Surgery, Gynecology and Obstetrics, Chicago

72:951-1096 (June) 1941

- Synovial Sarcomas in Joints, Bursas and Tendon Sheaths: Clinical and Pathologic Study of Sixteen Cases. D. A. De Santo, R. Tennant and P. D. Rosahn, New York.—p. 951.
- Bacterial Flora of Acute Traumatic Wounds. E. J. Pulaski, F. L. Meloney, New York, and W. L. C. Spach, Philadelphia.—p. 982.
- Sulfathiazole and Sodium Sulfathiazole in Treatment of Postoperative Pneumonia. W. W. Spink and C. J. Bellis, Minneapolis.—p. 989.
- Sulfone Chemotherapy in Hematogenous Osteomyelitis. E. Bick, New York.—p. 995.
- Experimental Collateral Circulation of Heart. K. Friedbacher, West Allis, Wis.—p. 1003.
- *Pericardiectomy for Chronic Constrictive Pericarditis. W. H. Cole, R. D. Weber and R. W. Kecton, Chicago.—p. 1008.
- *Extensive Cutaneous Burns, with Special Reference to Blood Chemical Changes. R. M. Tenery, New York.—p. 1018.
- *Postoperative Infection: Measures of Control. G. de Takats and J. H. Jesser, Chicago.—p. 1028.
- *Unruptured Primary Ovarian Pregnancy. A. H. Curtis, Chicago.—p. 1039.
- Disruption of Abdominal Wounds: Continuation of Previous Report. F. Glenn and S. W. Moore, New York.—p. 1041.
- Fractures of Mandible. M. S. Strock, Boston.—p. 1047.
- Prevention of Wound Disruption with Through and Through Silver Wire Stay Sutures. C. W. Holman and J. H. Eckel, New York.—p. 1052.
- Use of Alloy Steel Wire in Closure of Abdominal Wounds. T. E. Jones, E. T. Newell Jr. and R. E. Brubaker, Cleveland.—p. 1056.
- Acute and Chronic Intra-Abdominal Lymphadenopathy. A. O. Wilensky, New York.—p. 1060.

Pericardiectomy for Pericarditis.—In view of the hopelessness of the conservative treatment of pericarditis, Cole and his associates advise that the operation of pericardiectomy be performed before myocardial damage due to compression becomes irreparable. Although the operative mortality is high,

the results are otherwise excellent, especially in young people; few patients in late adult life survive the operation. The results may not be immediate. In 1 of their patients strength was still subnormal one year after operation, but two years after the operation he felt normal and was working daily as a pressman. The modern operation is to remove the constricting fibrous tissue. Local anesthesia may be used, though a general anesthetic is preferable. Most authors are in favor of removing the left half of the sternum to facilitate exposure. The reflection of the left pleura is located and dissected outward along with adjacent tissue to allow exposure of the heart. As soon as the heart is exposed, attempt should be made to identify the descending branch of the left coronary artery and the auriculoventricular groove. It is not necessary to remove the scar from the auricles or the great vessels unless the scar is more pronounced here than elsewhere. The essential features consist of removal of the scar from the ventricles and from the apex. The excision of the scar over the ventricles should be started on the left side because of the danger of dilatation of the right ventricle if excision is started on the right side. Areas of calcification should be removed only if this can be done safely. If the rhythm of the heart is disturbed, all manipulation should be terminated until it is again normal. During excision of the scar a flap of fibrous tissue should be left attached to the heart so that it might be inserted firmly against any bleeding point. Removal of the scar should be as complete as possible, but it should not extend beyond the limits of good exposure. If the pleural cavity is entered, the hole should be obliterated immediately and a suture taken to close it. The dead space created by excision of the ribs is sealed up as well as possible with the pectoral and intercostal muscles. A small rubber drain should be left in the inferior or superior part of the wound to prevent accumulation of fluid. Oxygen therapy is one of the most important considerations in post-operative care. Elevation of the head of the bed will add to the patient's comfort. Intravenous fluids should be given with caution because of the severe, sudden strain thrown on the heart incident to the operative procedure. A small transfusion in addition to from 500 to 700 cc. of dextrose given slowly is safe and advisable. Digitalis may be used for fibrillation but not for tachycardia alone. Fluid and foods are given as tolerated.

Blood Chemical Changes in Cutaneous Burns.—Tenery evaluates the role of blood electrolyte changes, especially potassium, in the production of the toxic stage in 8 severely burned patients. Blood pressures could not be determined, as both upper extremities were burned. Two patients showed no definite toxic symptoms, 3 showed moderate reactions but at no time were in shock (these 5 patients recovered) and unquestionable, severe symptoms of the toxic stage were present from the second twenty hours after the burn until death of the 3 remaining patients. The hemoerit rose in all the patients, but in only 2 did it reach a high level before adequate therapy brought about dilution. About one half of the hemoconcentration that was to occur was present six hours after the burn, indicating the need for early plasma transfusion. Observations on plasma protein indicate the need for conservatism in the use of parenteral saline solution and show a definite advantage in the use of plasma for preventing and relieving hemoconcentration. Increases in plasma potassium did not occur in the first forty-eight hours except in 1 patient whose burns were the slightest; in no instance did the potassium reach a toxic level. It is probable that elevations would have been greater had the patients not received treatment, but the important point is that toxic symptoms were present without a toxic plasma potassium level. Generally a decrease occurred during the first forty-eight hours and was then followed by a rise. Estimations of the cell hemoglobin content indicate that part of this decrease is the result of intracellular dilution; this may further confirm the concept that the erythrocytes become swollen in shock. In spite of the relatively large amounts of parenteral saline solution, plasma chlorides decreased slowly, though in no instance did they reach a dangerous level. In contrast, the sodium level fell to a much greater degree.

Plasma sodium of 3 patients dropped below 130 milliequivalents per liter. This could be a manifestation of adrenal insufficiency in spite of the normal plasma potassium. One of these patients was given eschatin and a rise in plasma sodium and chloride followed, but the patient remained in circulatory failure and died. In 1 patient a definite burn toxemia was present without lowered plasma sodium and in the others there was no relationship between the plasma sodium level and toxic symptoms.

Control of Postoperative Infection.—De Takats and Jesser discuss the sources of contamination in the surgical field. Data on 606 clean operations during which the sources of contamination were studied shows that 501 of the wounds healed by primary union, leaving 17.35 per cent with some disturbance in wound healing. Reddened cutaneous edges (even the slightest were recorded) were the most frequent complication. They are obviously due to contamination from the skin at the time of operation or possibly during healing. Postoperative infection resulting in prolongation of hospital stay or danger to life occurred in 1.59 per cent of the cases. In 143 herniotomies, the edges of 10.4 per cent were reddened and a hematoma was present in 3.7 per cent. This emphasizes the importance of adequate preparation of the pubic skin, careful hemostasis and the possibility of postoperative contamination. Among the 26 thyroidectomies, reddening of the skin and hematoma were also the two complications listed. Of the 45 hysterectomies, 23 per cent showed reddened cutaneous edges. This service has since cut down this percentage to a small minimum. Among the 28 cholecystectomies the wounds of 3.6 per cent presented reddened skin edges. In a miscellaneous group (105 cases) including neurosurgical cases and vascular surgery, plastic surgery, thoracic and genitourinary patients, primary wound healing (82.7 per cent) compared favorably with most other groups; the wound edges of 9.7 per cent were reddened. Appendectomies did equally well with the exception of minor cutaneous infections (6.56 per cent). The statistics on bone and tendon operations are favorable especially with regard to the low incidence of minor cutaneous infections (2.4 per cent) and of hematoma (3.8 per cent). Following mastectomies, necrosis of the skin edges was encountered in 20.83 per cent. This is obviously due to the effort of removing as much skin as possible or saving too much undermined skin and may point to a more frequent use of immediate or delayed skin grafts. Other laparotomies behaved much like the average group. The incidence of stitch abscesses, slight and serious wound infections, infected hematomas and septicemia totals 3.81 per cent of all clean operations. The reddened skin edges are undoubtedly due to inadequate sterilization of the skin or postoperative contamination of the wound. In addition to the soap and water, iodine and alcohol preparation, the authors advocate the use of silverfoil, under which they have never seen a true cutaneous infection, and the gluing of the gauze dressing to the skin with mastisol (40 Gm. of gum mastic and 100 Gm. of benzene filtered to which is added 20 minims [1.25 cc.] of castor oil). The importance of late cutaneous infections is best seen in ambulatory vein ligations. These patients require added protection of the suture line from cutaneous bacteria. The authors describe the use of a new flannel mask which efficiently filters bacteria but does not deflect them.

Ruptured Primary Ovarian Pregnancy.—Curtis reports an instance of a living unruptured primary ovarian pregnancy in which the fallopian tube was in no way attached to the ovary except that there was a trough from the fallopian tube to the ovary created by an unusually developed fimbria ovarica. Operation the next morning revealed a retrodisplaced edematous uterus one and one half times its normal size. The left ovary occupied a relatively normal position, independent of the tube and was converted into a hemorrhagic cyst the size, shape and color of a large, freshly washed, deep red medium sized peach. The freshly removed hemorrhagic fluctuant ovarian mass measured 5.5 by 3.5 by 6 cm. Hemisection after fixation in Kaiserling solution revealed an intact wall which varied from 0.5 to 2 cm. in thickness. The cut surface was reddish brown except for a 2 to 4 mm. shell of grayish white, normal appearing ovarian tissue which encased two thirds of the circumference of the solid wall, within which was a central cavity.

No corpus luteum was evident. The spherical cavity, filled with clear liquid, was lined by a smooth glistening membrane; its diameter measured 2.5 cm. An intact curled fetus, 12 mm. in length, was supported by filmy membranes and a clearly distinguishable body stalk attached near the caudal end. Microscopic study of the wall revealed typical chorionic villi with well preserved syncytial and Langhans cells. Primary ovarian pregnancy is probably not rare. It may explain many serious hemorrhages from the ovary; it may account for some instances of secondary abdominal pregnancy—a much more common condition than has heretofore been realized.

Tennessee State Medical Assn. Journal, Nashville

34:205-248 (June) 1941

- Tuberculosis Control Program in Tennessee. R. S. Gass, Franklin, and W. W. Hubbard, Nashville.—p. 205.
Tumors of Breast. C. L. Chumley, Knoxville.—p. 210.
Sulfathiazole in Treatment of Otitis Media: Report on Thirty-Two Cases. F. L. Alloway, Kingsport.—p. 217.
Treatment of X-Ray and Radium Burns by Radical Excision and Grafting. B. Douglas, Nashville.—p. 220.
Diagnosis and Management of Goiters. C. E. Newell, Chattanooga.—p. 225.
Present Day Methods in Treating Urinary Tract Infections. B. W. Wright, Nashville.—p. 231.

Virginia Medical Monthly, Richmond

68:375-436 (July) 1941

- Endocrine Therapy of Ovarian Failure. E. C. Hamblen and R. L. Pullen, Durham, N. C.—p. 375.
Assay of Urinary Gonadotropin in Cases of Testicular Tumor. R. J. Main, Richmond.—p. 381.
Ignorance and Medicine. A. D. Hart Jr., University.—p. 384.
Hemorrhage in Labor. C. J. Andrews, Norfolk.—p. 390.
Cystic Lung Disease: Report of Two Cases with Autopsy Findings. W. L. Nalls and D. B. Cole, Richmond.—p. 394.
Independent Occurrence of Multiple Pulmonary Abscesses: Report of Case. G. B. Craddock, Lynchburg, W. E. Pembleton and P. P. Vinson, Richmond.—p. 398.
Ocular Tuberculosis: Review and Report of Four Cases. H. G. Preston, Harrisonburg.—p. 400.
Torula Histolytica (Blastomycoides Histolytica) Meningitis: Report of Case with Recovery. E. C. Toone Jr., Richmond.—p. 405.
Verumontanitis. F. Helvestine Jr., Roanoke.—p. 407.
Use of Sulfapyridine and Sulfathiazole in General Practice. W. B. McIlwaine, Petersburg.—p. 409.
In Defense of Bad Temper. J. S. Horsley, Richmond.—p. 411.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

49:309-364 (June) 1941

- Diagnosis and Treatment of Anterior Pituitary Disturbances. M. G. Wohl, Philadelphia.—p. 309.
Gynecologic and Obstetric Endocrinology. J. P. Greenhill and S. C. Freed, Chicago.—p. 318.
Ruptured Graafian Follicle and Corpus Luteum Cysts with Intraperitoneal Hemorrhage. T. R. Hofmann, Berkeley, Calif.—p. 331.
Pyelonephritis Incident to Pregnancy. A. H. Peacock, Seattle.—p. 340.
Neurogenic Theory Concerning Effects of Iodine on Goiter. S. Brock, Chicago.—p. 344.
Implications of Weight Gain During Pregnancy. G. S. Beardsley, Eugene, Ore.—p. 350.
Testosterone in Treatment of Prostatism and Benign Prostatic Hypertrophy. E. L. Tourlet, Los Angeles.—p. 354.
Extensive Generalized Thrombophlebitis Following Eclampsia and Cesarean Section: Recovery with Heparin Therapy. E. W. Boland and H. M. Rooney, Los Angeles.—p. 356.

Wisconsin Medical Journal, Madison

40:461-552 (June) 1941

- *Occult Hypothyroidism in Wisconsin Women. A. M. Schwittay, Madison.—p. 475.
Pelvic Bone Metastases, from Carcinoma of Breast, Treated with Roentgen Therapy: Case Report. L. V. Littig, Madison.—p. 479.
Management of Patients with Renal Lithiasis. C. C. Higgins, Cleveland.—p. 480.
Bow Leg. W. P. Blount, Milwaukee.—p. 484.
Surgical Treatment of Otosclerosis. G. E. Shambaugh Jr., Chicago.—p. 488.
Common Pitfalls in Diagnosis. F. J. Hirschboeck, Duluth, Minn.—p. 493.

Occult Hypothyroidism in Wisconsin Women.—Schwittay suggests that the present interpretation of basal metabolic rates be revised; otherwise many patients who could benefit from thyroid therapy will be missed. He made the therapeutic test of thyroid medication and found that the results were often as good when the basal rate was —8 or —10 as when it was —25 or —30. Good results were obtained in such women with all types of menstrual disorders.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1:805-840 (May 31) 1940

- Da Costa's Syndrome (or Effort Syndrome): Mechanism of Somatic Manifestations P. Wood—p 805.
Rapid Identification of *Clostridium Welchii* by Nagler Reaction. Nancy J. Hayward—p 811.
After Treatment of Paraplegic Patients Following Injuries to Spine. E. L. Gownland—p 814.
Intravenous Anesthesia in Obstetrics K. M. Robertson—p 815.
Effect of Benzedrine of Oculogyric Crises of Parkinsonism H. L. Hoffman—p 816.

1:841-876 (June 7) 1941

- Calculation and Prescribing of Infants' Feeds I. After Neonatal Period, Use of Standard Mixtures Helen M. M. MacKay—p 841.
Etiology of Da Costa's Syndrome P. Wood—p 845.
Syphilitic Thoracic Aneurysm in Young Adults. B. Evans—p 851.
Note on Testing of Transfusion Fluids for Contamination W. R. Logan—p 854.

Indian Medical Gazette, Calcutta

76:193-256 (April) 1941

- Fracture of Carpal Scaphoid C. J. Hassett—p 193.
Surgical Complications of Filariasis P. N. Ray—p 194.
'Xiphisternal Ache' or Low Substernal Pain R. J. Vakil—p 199.
Report on Use of Cadmium Sulfide in Treatment of Pulmonary Tuberculosis at Jadabpur Tuberculosis Hospital. K. S. Ray, N. N. Sen and H. N. Das Gupta—p 203.
Reduction of Benedict's Solution by Urine During Course of Sulfathiazole Therapy. R. E. Strain—p 206.
Urinary Excretion of Nicotinic Acid in Pellagrins B. Naganna, K. V. Giri and P. Venkatesam—p 208.
Use of Cassia Fistula in Treatment of Blackwater Fever. K. Venkatachalam and A. N. Ratnagriswaran—p 211.
Search for Latent Syphilitic Plague in Calcutta C. L. Pasricha and G. Panja—p 212.
Erythrocyte Sedimentation Rate in Cholera A. J. H. deMonte and S. K. Gupta—p 213.
Sterility and Potency of Injectable Substances. II. Salines for Intravenous Use C. L. Pasricha, K. S. Malik and B. M. Paul—p 216.
Further Type of Choleraphage—Type N. C. L. Pasricha, M. N. Lahiri and A. J. H. deMonte—p 218.
Insectary Colony of *Anopheles Stephensi Mysorensis*. P. F. Russell and B. N. Mohan—p 219.
Hematologic Technique: Part X. L. E. Napier and C. R. Das Gupta—p 229.
Lecture on Coordinated Effect in Hygiene W. H. Crichton—p 240.
Water in Relation to Health. T. N. S. Raghavachari—p 233.

Journal of Royal Army Medical Corps, London

76:249-310 (May) 1941

- *Analysis of 204 Cases of Cerebrospinal Fever Among British Troops of the British Expeditionary Force in France R. Priest—p 249.
Reorganization of Field Ambulance. H. L. G. Hughes—p 261.
Phthisis Following Pleurisy. W. Laurie—p 270.
Treatment of Soldier's Foot. A. J. Helfet—p 282.

Cerebrospinal Fever Among British Troops in France.

—Priest states that 204 cases of cerebrospinal fever occurred between February 1940 and June 14, 1940 in the British Expeditionary Force in France. The diagnosis of 171 was proved bacteriologically, and the symptoms, physical signs, clinical course and the general characteristics of the cerebrospinal fluid in the other 33 were typical. At no time was the infection epidemic. In fact, its sporadicity was a particularly conspicuous feature. The onset was varied and deceptive. It was of three types: severe fulminating with rapid loss of consciousness and late meningeal signs, the more usual acute onset with immediate signs of meningitis and the type with chronic meningococcal bacteremia. The onset of 56 was sudden. The illness in 12 followed some form of exercise or exertion. Rigors, headache, vomiting and nuchal stiffness were the most frequent symptoms in all stages of the disease. Vomiting was sometimes troublesome and persistent. It was absent throughout the illness in 17. A few patients did not vomit until treatment with sulfapyridine was begun. Pain and stiffness in the neck and headache were steadily progressive. Photophobia was a fairly common symptom late in the disease. At first some patients were treated with sulfapyridine and antimeningococcus serum, but experience showed that the response to chemotherapy alone of patients suffering from the severe and fulminating forms of the disease was excellent and rapid. Thereafter serum was

discontinued. In fact, the serum sickness of a few patients proved to be a "nuisance value" and a check to an otherwise uneventful convalescence. The maximal dose of sulfapyridine was 81 Gm. in ten days and the minimal dose was 145 Gm. in six days. The average dose per patient was 34.4 Gm. administered during seven and nine-tenths days. Cyanosis was a frequently observed feature during therapy, but it was never of sufficient intensity to discontinue treatment. The rapid amelioration of the patients' general condition was short of miraculous. The comparative absence of permanent disability was another welcome feature. From a military aspect the sulfanilamide and its derivatives have proved of inestimable value in that once a patient is under the influence of the drug he can be moved from a forward unit to one farther back by ambulance or train, or overseas, without detriment to recovery. Chemotherapy permits the sending of convalescents to a convalescent depot instead of on sick leave. Of 50 men sent to a convalescent depot in France, 46 were examined at intervals and only 3 claimed annoying headaches; 1 or 2 complained of pain at the site of lumbar puncture but, aided by the example of the others, they got well and went back to duty. There were 2 deaths but neither was due to the effects of meningococci; 1 patient died six weeks after onset from an ascending infection following repeated catheterization, and 1 died from bronchopneumonia and pericarditis with effusion and adhesions not of meningococcal origin.

Lancet, London

1:685-712 (May 31) 1941

- *Quantitative Aspects of Transfusion G. A. Harrison and L. E. R. Picken—p 685.
Civilian Psychiatric Air Raid Casualties F. Brown—p 686.
*Absorption and Excretion of Sulfonamides Applied Locally. Observations in Rabbits L. G. Goodwin and G. M. Findlay—p 691.
Thoracoplasty for Pulmonary Tuberculosis J. V. Hurford—p 693.

1:713-744 (June 7) 1941

- Casualties from Western Desert and Libya Arriving at a Base Hospital G. A. G. Mitchell, N. J. Logie and R. S. Handley—p 713.
Reduction of Dust Borne Infection by Treatment of Bedclothes M. van den Ende, D. G. f. Edward and Dora Lush—p 716.
Abdominal Aneurysm Four Cases G. H. Jennings—p 719.
Preservation of Organic Phosphorus Compounds in Stored Blood by Glucose. M. Maizels—p 722.
Estimation of Prothrombin. T. K. Owen and M. Toohy—p 724.

Quantitative Aspects of Transfusion.—Harrison and Picken state that the object of transfusion in hemorrhage and circulatory shock is to restore a balance and not to stimulate impaired function. To determine the amount to be transfused it is necessary to consider the dissolved protein content of the medium and the blood volume of the subject in health and at the time of the transfusion. For each stone (14 pounds, or 6.4 Kg.) of body weight there is in health approximately 1 pint (500 cc.) of blood. The proportion of corpuscles in the blood varies between 36 and 51 per cent by volume. During hemorrhage the volumes of erythrocytes and plasma are reduced, but it is the fall in the volume of plasma which produces the immediate signs and symptoms of circulatory or "secondary" shock. The water and salts of plasma are easily replaced but in the absence of its protein their contribution to the circulation is short lived as they leave the circulation rapidly. Only serum, plasma or whole blood can replace proteins. An acute hemorrhage would be extremely severe if the patient lost 3 pints of cells and 3 pints of plasma. To replace such a loss 3.4 pints of filtered serum, 5.1 pints of citrated plasma, 8 pints of citrated whole blood and 6.6 pints of defibrinated whole blood would be required. These are maximal amounts; they should rarely, if ever, be exceeded. Few patients will need more than 2 pints of serum or plasma initially. After the initial treatment for shock, whole blood should be used for the subsequent treatment of anemia, the volume being estimated from hemoglobin determinations. In wound shock without significant hemorrhage 1 or, at most, 2 pints of serum or their equivalent of plasma should be given. In severe secondary shock 1 pint in excess of the amount required to replace lost plasma may endanger life because of the resultant pulmonary edema. In primary shock only, with no evidence of loss of cells or plasma by internal hemorrhage or edema, there is no rational basis for transfusion therapy.

Absorption and Excretion of Locally Applied Sulfonamides.—Goodwin and Findlay determined the rate of absorption, conjugation and excretion of sulfanilamide, sulfapyridine and sulfathiazole after their local application to uninfected wounds in rabbits. The drugs were finely powdered and the dosage employed was based on that recommended for local application in gas gangrene, from 5 to 15 Gm. of powdered drug for an adult. For sulfanilamide a maximal blood concentration of from 1 to 5 mg. of free sulfanilamide per hundred cubic centimeters was attained about five hours after application. Thereafter the concentration fell rapidly and, if a level of about 2 mg. was to be maintained, oral administration had to be started six hours after local application. About 50 per cent of the dose applied was excreted in twenty-four hours. About 90 per cent of the excreted drug was in the conjugated form. The level of free sulfapyridine was extremely low, and all trace of it disappeared within twenty-four hours. The concentration of "total" drug reached to about 0.5 mg. per hundred cubic centimeters in from three to four hours and then decreased gradually. Excretion was slower than with sulfanilamide, about 7 per cent being eliminated in twenty-four hours. From 70 to 80 per cent of the excreted drug was conjugated. The maximal concentration of about 0.75 mg. per hundred cubic centimeters of free sulfathiazole was reached in five hours, and the subsequent decrease was less rapid than with sulfanilamide. About 18 per cent of it was excreted in twenty-four hours and about 75 per cent of this was in the conjugated form. The rate of absorption of the three drugs from wounds in the skin and thigh muscles differed but little. The experiments involved clean, uninfected wounds; grossly infected wounds might modify absorption.

Medical Journal of Australia, Sydney

1:662-692 (May 31) 1941

- *Studies in Tuberculosis. R. Webster.—p. 662.
Method of Dealing with Fractures Through Infraorbital Margin. T. B. Law.—p. 666.
Treatment of "the Effort Syndrome." A. G. Butler.—p. 667.
Suicide and Its Prevention. E. H. Derrick.—p. 668.
Infertile Marriage or Sterility. A. Grant.—p. 672.

1:693-716 (June 7) 1941

- Some Observations on Myocardial Infarction. T. E. Lowe.—p. 693.
Effect of Estrogenic Substances on Kidney of *Trichosurus Vulpecula*. A. Bolliger and A. J. Canny.—p. 697.
Vesical Exclusion. K. Kirkland.—p. 699.

Tuberculosis.—Experience gained from the cultivation of 370 strains of *Mycobacterium tuberculosis* from 928 diverse samples of pathologic tissues and exudates has convinced Webster of the validity of the claim that cultural methods are at least as effective as that of guinea pig inoculation. He believes that direct cultivation of *Mycobacterium tuberculosis* should be a matter of routine in all health, hospital and sanatorium laboratories. The technical methods involved do not require elaborate equipment. *Mycobacterium tuberculosis* should receive the same treatment as diphtheria bacilli, meningococci and other pathogens of everyday occurrence, which when not evident in a film preparation are immediately subjected to cultivation. The staining and searching of film preparations of sputum as a standard for the bacteriologic diagnosis and control of pulmonary tuberculosis is, the author states, illogical and deplorably low.

1:717-746 (June 14) 1941

- *Acute Anterior Poliomyelitis and Vitamin B Deficiency. Karen Helms.—p. 717.
Psychology of War. J. Bostock.—p. 723.
Streptococcus Types in Scarlet Fever: Association of Change of Type with Complications and Cross Infection. Helen Kelsey, with commentary by F. V. Scholes.—p. 725.

Poliomyelitis and Vitamin B Deficiency.—Helms puts forth the view, for which she reviewed an extensive literature, that vitamin B deficiency is a predisposing cause of acute anterior poliomyelitis. She finds indirect evidence in the fact that poliomyelitis tends to occur with greater frequency when the demands for vitamin B₁ are heavy, as in childhood, pregnancy, substandard nutrition and after excessive muscular

exercise in children, or young adults, when poliomyelitis is prevalent. There are points of resemblance too between poliomyelitis and beriberi, which is known to be caused by vitamin B₁ impairment. The direct evidence, the author thinks, would be supplied if suitable tests could be devised. She suggests the investigation of the vitamin nutrition of patients suffering from poliomyelitis. These investigations should include the intake of the vitamin B complex, the conditions which increase the need for the vitamin or interfere with its absorption and, in adults, the amount of alcohol and narcotics taken. The presence of neutralizing substances in the blood may tend to reduce the occurrence of the paralytic form of the disease but does not seem to be a potent factor. The low incidence of paralytic poliomyelitis among those exposed to the disease may be due to the fact that this form occurs only when the biochemical state of the central nervous system favors the propagation of the virus. Vitamin B deficiency may constitute one cause of biochemical alteration. One investigator, reporting 5 cases of acute poliomyelitis, attributed the rapid recovery, with freedom from paralysis or rapid regression therefrom, to vitamin B therapy. Ordinary white flour, made from grain milled according to modern processes, consists entirely of starchy endosperm and contains neither the germ nor the bran, the former of which is nutritionally the best part of the seed. It is poorer than whole meal flour in vitamin B₁ (thiamine) and vitamin B₂ (riboflavin), both of which are concerned with tissue respiration. Modern milling processes were adopted in 1870. Acute anterior poliomyelitis seems to have increased since 1880.

Tubercle, London

22:79-110 (April) 1941

- *Tuberculosis of Pericardium and Heart. H. Hannesson.—p. 79.
X-Ray Protection. M. C. Reinhard.—p. 100.

Tuberculosis of Pericardium and Heart.—Hannesson states that tuberculous pericarditis from an adjoining tuberculous lesion is not as rare as is generally supposed. According to Kornblum, Bellet and Ostrum, the incidence in general necropsies is approximately 1 per cent and about 4 per cent in necropsies on patients with pulmonary tuberculosis. A diagnosis of tuberculous pericarditis can be made only when the following are present: signs and symptoms of an infection, pericardial friction rub, pericardial effusion and thickening and signs of adhesions, signs of circulatory failure of the "inflow stasis" type, signs of extension of the process to other serous sacs or a disseminated tuberculosis and a normal or small heart as demonstrated after a pneumopericardium. A clinical diagnosis can be made on a careful physical and roentgen examination. An exact diagnosis is possible only by demonstration of tubercle bacilli in the pericardial fluid. Tuberculosis limited to the pericardium is rare, as is tuberculous involvement of the myocardium and the endocardium. In miliary tuberculosis tubercles may be demonstrated in the myocardium at necropsy, but their presence cannot be detected clinically. Tuberculosis of the pericardium is usually a fatal disease (the mortality is around 83 per cent). If the tuberculous process in the pericardium and elsewhere subsides, the mechanical effects on the heart are the result of pericardial healing. The inflammatory process heals, with resulting cohesion of the visceral and parietal layers of the pericardium and partial or complete obliteration of the sac. This imposes extra work on the heart and results in cardiac hypertrophy and sometimes in ultimate heart failure. If the pericarditis is extensive and particularly if associated mediastinitis exists, the resulting fibrosis may hamper the right auricle and the great veins and partially obstruct the return of blood to the heart. This results in chronic congestion of the liver and causes recurrent ascites. This condition is known as chronic mediastinopericarditic pseudocirrhosis of the liver, or Pick's disease. The occurrence of anatomically primary tuberculous pericarditis is questioned. Tuberculous pericarditis is seen most often in men past 40 years of age. Negroes appear to be more susceptible than white persons. Polyserositis is probably tuberculous in origin.

Schweizerische medizinische Wochenschrift, Basel
71:529-548 (April 19) 1941

- *New Points of View on Diagnosis and Therapy of Pneumococcic Peritonitis. G. Neff.—p. 529.
Treatment of Crural Ulcer by Means of Injection of Varices. K. Sigg.—p. 532.
Phenylmercuric Borate (Merfen) in Treatment of Dermatoses. F. Wyss-Chodat.—p. 534.
Donaggio's Reaction. H. Brandt and W. Schusselé.—p. 536.
Is Campaign Against Cancer Adequate? P. Jung.—p. 538.

New Points of View on Pneumococcic Peritonitis.—Neff points out that diagnosis of pneumococcic peritonitis is difficult because it is readily confused with gangrenous appendicitis and perforation peritonitis. The disease attacks chiefly small girls. The previous history often discloses a renal disorder, a vulvovaginitis, a bronchitis or other infection. The attack is often preceded by diarrhea in contrast to appendicitis, which is usually preceded by constipation. The onset is sudden with high fever and diffuse abdominal pain. Herpes labialis is frequently present, but the psoas phenomenon is absent. The children present cyanosis and other signs of severe intoxication. Pulse rate and temperature are usually elevated, and a fairly high leukocytosis is present. The sensorium is dulled, and delirium may supervene. The diagnosis is fairly certain if many of these symptoms are present, but none are pathognomonic. The lack of certainty in the diagnosis presents a difficult problem, especially if peritonitis from appendicitis cannot be definitely excluded, since laparotomy is not only useless in pneumococcic peritonitis but may even be harmful in the early stages. The author reports 3 cases of pneumococcic peritonitis in which laparotomy verified the diagnosis. Sulfanilamide therapy was at once instituted and the patients recovered. The author suggests that a laparotomy be performed at once, whenever pneumococcic peritonitis is suspected, in order to make a definite bacteriologic diagnosis. The appendix should always be removed in order to avoid later adhesions. The sulfanilamide is first administered by injection but, after the intestinal activity has been reestablished, may be given by mouth. The author used sulfapyridine in the beginning but later turned to sulfathiazole because the latter is less toxic. He warns against attempting to establish a diagnosis of pneumococcic peritonitis "ex juvantibus" by giving sulfathiazole before performing a laparotomy. The sulfanilamides effect a reduction in temperature also in streptococcic or Escherichia coli peritonitis resulting from appendicitis, and thus an erroneous diagnosis might result and much valuable time be lost if the appendix has to be removed.

Clinica, Bologna

6:571-646 (Sept.) 1940. Partial Index

- *Influence of Ascorbic Acid on Velocity of Healing of Experimental Wounds. M. Trincas.—p. 594.
Roentgen Picture of Cancer of the Stomach. N. Parere.—p. 601.
Plethysmography, Arterial Blood Pressure, Rhythm of Heart and Cutaneous Vasomotor Reactions to Nicotinic Acid in Nonpellagrous Men. M. Bassi and E. Liesch.—p. 620.

Influence of Ascorbic Acid on Wounds.—Trincas experimented with two groups of guinea pigs, those on a normal diet and those given alternating scurvy causing diets for twenty days. Wounds were inflicted on the animals at the beginning of the third week of the experiment, and the wounds were infected with staphylococcus cultures. The animals with avitaminosis C were divided into four groups, those having daily subcutaneous injections of 0.5, 3 or 6 mg. of ascorbic acid in the course of the scurvy causing diet and those receiving no ascorbic acid but in which the scurvy producing diet was discontinued and a normal diet resumed. The author found that a scurvy producing diet retards healing of wounds. Ascorbic acid injected subcutaneously in a daily dose of 3 mg. in the course of a scurvy causing diet accelerated healing. The course of healing is the same when ascorbic acid is administered daily in a dose of 3 mg. as when 6 mg. of the substance is given. Healing is more rapid and of a better character when the scurvy producing diet is discontinued and a normal diet is resumed without administration of the ascorbic acid.

Rivista di Patologia e Clin. d. Tuberculosis, Bologna
15:133-190 (March) 1941. Partial Index

- *Anal Fistula in Tuberculosis. V. Basanti and S. Sticotti.—p. 144.

Anal Fistula in Tuberculosis.—Basanti and Sticotti examined 732 patients with surgical or pulmonary tuberculosis for the presence of anal fistula. This was found in 47 patients with pulmonary tuberculosis and in 1 with surgical tuberculosis. All but 4 were men. Of the 47 patients with pulmonary tuberculosis and anal fistula, 29 suffered from an advanced destructive, exudative form of tuberculosis and 18 from the productive type. The perianal abscess developed early or late in the course of tuberculosis without any relation to the progression of the course of the pulmonary disease. Tissues of the wall of the fistula were excised in 27 and were used for a biologic test on guinea pigs and for cultures. Tissue of 12 patients with ulcerative pulmonary tuberculosis gave positive results for tubercle bacilli in 8 by the biologic test and in 7 by culture. Those of 15 patients with fibrous pulmonary tuberculosis who were sputum negative gave positive results for tubercle bacilli in 7 instances by the biologic test and in 2 by culture. A microscopic study of peristomal tissue in 5 cases showed the presence of tubercles in 2 cases, a diffuse tuberculous tissue reaction in 1 case, reticuloendothelial proliferation with inflammation in 1 case and a nonspecific tissue reaction in 1. The authors believe that perianal abscess which precedes the formation of anal fistula is tuberculous and that tubercle bacilli reach it by way of the blood.

Prensa Médica Argentina, Buenos Aires

28:1091-1142 (May 21) 1941. Partial Index

- *Clinical Value of Determination of Thrombogen in Blood. M. Acuña and A. A. Lobo.—p. 1091.

Thrombogen in Blood.—According to Acuña and Lobo, determination of the amount of thrombogen in the blood is of diagnostic value for determination of liver functions. It is of clinical value for recognition of need of vitamin K therapy in types of hemorrhage caused by disorders of the thrombogen metabolism. The authors made determinations of the blood thrombogen of normal children and adults and in a group of patients with various diseases. They found that the level of blood thrombogen in normal children and adults is constant on repeated determinations. The blood thrombogen level is diminished in acute diseases of liver with increased bilirubinemia, is normal in hemophilia despite the increase in the number of platelets, and is greatly diminished in rectal hemorrhage of newborn infants. The prolonged coagulation time in hemophilia is probably due to functional alteration in the platelets. Vitamin K administered in large doses moderately increases thrombogenemia in diseases of the liver with subacute dysfunction and fails in acute diseases of the liver. Rectal hemorrhage in newborn infants is caused by a transient hypoprothrombopenemia which is rapidly controlled by vitamin K therapy and blood transfusion. The latter should not be dispensed with. It provides blood with thrombogen already formed, which stimulates the liver to production of thrombogen. It is advisable to transfuse fresh blood, because the potency of thrombogen is diminished in preserved blood.

Archiv für Gynäkologie, Berlin

170:457-666 (Nov. 7) 1940. Partial Index

- *Treatment of Irregular and Prolonged Genital Hemorrhages Caused by Hormonal Dysfunction. C. Kaufmann and W. Giesen.—p. 457.
Action of Follicular Hormone on Function of Human Uterine Musculature. M. Kneer.—p. 483.
Studies on Thiamine Hydrochloride in Gynecology and Obstetrics. A. Hildebrandt.—p. 540.
Increasing Efficacy of Ecobols by Means of Calcium. H. Hückel.—p. 584.
Dystrophic Changes of Vagina in Nursing Mothers as Result of Deficiency of Follicular Hormone. Maria Alexiu.—p. 626.
Trauma Caused by Forceps and Intracranial Hemorrhage. R. Bayer.—p. 638.

Treatment of Genital Hemorrhage Due to Hormonal Dysfunction.—Kaufmann and Giesen survey therapeutic results obtained in genital hemorrhages caused by defective hormone production of the female gonads. They emphasize that irregular and prolonged hemorrhages can be regarded as hormonal in origin only if the source of hemorrhage has been established

by microscopic examination and that this is best accomplished by means of the so-called strip abrasion curettage (Reifferscheid's strip curet). Complete curettage may cause damage to the basal layers of the mucosa and therefore should be limited to the cases in which it is absolutely necessary. A thorough knowledge of disorders and administration of the correct type of endocrine preparations in adequate doses are the prerequisites to a successful treatment. The majority of genital hemorrhages are caused by glandular cystic hyperplasia of the endometrium, which in turn results from persistence of a follicle. Administration of adequate quantities of progesterone is the best method of treatment. If strip abrasion has demonstrated glandular cystic hyperplasia, the authors administer 10 mg. of progesterone on six successive days. In young girls with demonstrated glandular cystic hyperplasia, treatment with progesterone produces a permanent cure because the upset in the coordination of the ovarian function has been counteracted. In the glandular cystic hyperplasia which develops in sexually mature women the progesterone treatment is not as reliable. In these women persistence of the follicle with subsequent hypertrophy of the mucosa is chiefly a sequel to a constitutional pluriglandular insufficiency. This is proved by the fact that only 3 of 14 women were cured; in 9 the treatment had only a substitutional effect, whereas in 2 the bleeding was uninfluenced. The authors believe that in these women the substitutional effect of progesterone is all that can be expected. Glandular cystic hyperplasia in women of premenopausal or the menopausal age is more favorably influenced by progesterone. One series of progesterone treatments produced a cure with freedom from relapse for at least a year in 7 of 11 women. In 3 women a relapse made a second progesterone treatment necessary; 1 woman was treated with a corpus luteum preparation following a recurrence. Estrogen did not prove satisfactory in the treatment of glandular cystic hyperplasia. Genital hemorrhages may be caused also by inadequate development of the uterine mucosa. In these cases a normal endometrium must be built up by means of successive administration of both gonadal principles. The authors treated 6 such patients. A girl of 14 with pronounced asthenia was treated unsuccessfully. Of 5 women between 17 and 32 years of age, 3 were cured; in 1 woman the treatment had merely a substitutional effect, and in the other no improvement was obtained. Four young girls in whom a strip abrasion was not possible were treated empirically with progesterone and the treatment was successful in 3.

Archiv für Kinderheilkunde, Stuttgart

122:65-112 (Feb. 25) 1941

- *Auxiliary Control of Tuberculosis by Means of Calmette Prophylactic Vaccination. A. Wallgren.—p. 65.
Roentgen Diagnosis of Otitis and Mastoiditis in Infants and Preschool Children. P. Sonnauer.—p. 77.
Prognosis of Middle Ear Inflammation in Nurslings, with Reference to Role Played by Infective Agents. P. Dudás and S. Halka.—p. 85.
Clarification Zones in Long Tubular Bones Found in Leukemia of Children. K. Gefferth.—p. 94.

BCG Vaccination.—Wallgren reports the observations made in Göteborg (250,000 inhabitants) of the prophylactic value of Calmette's vaccine during the course of more than ten years, with two general surveys (in 1933 and 1938). The first survey included 355 children, 230 of whom had been exposed for at least two months to a contaminated environment after inoculation. Two deaths had occurred, but no pulmonary lesions had been found at necropsy. Pulmonary lesions due to primary tuberculosis were seen in only 1 case; in 11 others insignificant lung changes could be traced to nontuberculous diseases. All others showed a normal roentgenogram and were clinically healthy. The second general immunologic inventory included 1,069 children and adults. Of these, 15 had died in the meantime from other causes; 149 failed to take the test, but 53 of these were reliably reported in good health. Of the remaining 905 subjects, 397 were definitely known to have lived in a contaminated environment; in 207 no exposure could be ascertained; the majority of the remaining 301 were assumed to have been exposed to infection. In no inoculated and exposed children could pulmonary changes of a tuberculous origin be determined. The average tuberculin-positive reactions for the

three groups was 97 per cent (97.2, 96.1 and 97.3 per cent). The mortality rate for all small children in Göteborg fell from about 4 per thousand for the three five year periods preceding the introduction of BCG vaccination to 1.4 per thousand in the survey of 1933 and to 0.5 per thousand in the survey of 1938. A modified form of Calmette's technic was used, in which the dosage was greatly reduced (to 0.5 mg.) and the intracutaneous administration employed. This small dosage was generally found to be sufficient to induce tuberculin sensitivity without local abscess formation. The author calls attention to certain guiding principles adhered to in the use of BCG vaccine, such as the vaccination solely of subjects definitely determined to be free from tuberculosis; the continuation, with increasing doses, of vaccination until a positive tuberculin reaction was obtained; the isolation of children from contaminated homes for a longer period of time, and the isolation of vaccinated children usually for two months after inoculation. Newborn infants were regarded as nontuberculous and vaccinated immediately after birth. The author believes that BCG vaccination, rationally performed, apparently reduces the danger of more serious forms of primary tuberculous lesions after virulent infection and that more serious forms of pulmonary tuberculosis appearing subsequent to primary pulmonary infection of juvenile infection may conceivably be prevented to a certain extent by BCG vaccination. Tuberculin sensitivity and specific relative protection conferred by the vaccine may be assumed to last for ten years or more. The author feels that the absence of comparable control groups, due to the popularity of Calmette's technic in his city with the consequent cooperation of the public, affects appraisal values. Only 10 persons were found who had refused vaccine prophylaxis. Of these, 5 had died of tuberculosis, whereas no deaths were recorded for the group of 397. In spite of his cautious evaluation of Calmette's vaccine, the author's aim is to undo some of the prejudice entertained in Germany, since the Lübeck disaster, against BCG vaccination.

Beiträge zur klinischen Chirurgie, Berlin

171:161-336 (June 12) 1940. Partial Index

- Cancer of Free Portion of Small Intestine. W. Geisthövel.—p. 161.
*Traumatic Edema of Hand. Schörcher.—p. 176.
Carcinoma Caused by Roentgen Rays. W. Pohl.—p. 195.
True Esophageal Hiatus Hernia and Its Surgical Treatment. W. Nell.—p. 211.
Diseases of Iliosacral Joints with Special Consideration of Inflammatory Diseases and Their Pathogenesis. U. Graff.—p. 226.
Posttraumatic Edema. W. Wagner.—p. 261.
Differential Diagnosis of Acute Osteomyelitis of Patella. H. Sprengell.—p. 283.
Aspects of Postoperative Massive Pulmonary Collapse. F. Schendzielorz.—p. 297.

Traumatic Edema of Hand.—According to Schörcher, traumatic edema of the hand develops as a rule a few hours after a slight dull injury to the hand. The back of the hand swells, and the thenar and hypothenar eminences and other soft parts of the hand become involved. The cutaneous rugae disappear; the skin becomes shiny and bluish pale and feels much cooler than the opposite hand. The swelling does not pit on pressure. Sweating may be increased or decreased. Motility of the fingers is restricted, so that making a fist is impossible. The hand is painful and hypersensitive to cold. The grave course of the disorder contrasts strongly with mildness of the injury. Operation offers the only cure. The cause is unknown, but from the effectiveness of surgical intervention on the nervous system it has been surmised that a constitutional inferiority of the neurovascular system is responsible. The author reports the history of a patient who developed edema of the right hand following a street car accident. Externally no injury was visible, but the hand became painful and two hours later presented an elastic swelling. Poultices, ointments, hot air, massage, exercises and roentgen treatment persisted in for ten weeks proved of no avail. Intervention on the sympathetic nervous system was decided on next. Several cubic centimeters of a 0.2 per cent solution of pontocaine hydrochloride was injected into the right stellate ganglion. This reduced the swelling of the hand but also produced Horner's syndrome. The swelling and pain recurred six days later. Anesthesia of the stellate ganglion was repeated with the same result, except that the improvement lasted only two

days. Next, the stellate ganglion was resected, resulting in the disappearance of the swelling, which, however, recurred seven weeks later. A periarterial sympathectomy was now performed on the recurrent ulnar artery. The edema disappeared within thirty-six hours but reappeared four days later. Periarterial sympathectomy was then performed on the ulnar artery at the wrist. Four weeks later the woman worked again as a milliner, but the edema recurred and local anesthesia was induced in the ulnar nerve at the elbow. The swelling subsided on the ulnar side of the hand. Three weeks later a silk thread drainage was introduced, and this controlled the swelling and pain after two weeks. The patient has since worked for eight months without further trouble. In the type of traumatic edema under discussion, the tissues show no inflammatory changes. Traumatic edema of the hand has been explained in various ways. The author is opposed to the assumption that the anatomic structure of the fascia of the hand is responsible. Those who regard traumatic edema of the hand as a reflex neurosis consider only the blood vessels to the exclusion of lymph vessels. The author argues that the lymphatic system must likewise have a sympathetic innervation and shows that in edema of the hand the pathologically increased peripheral sympathetic reflexes act not only on the blood vessels but on the lymph vessels as well. The fact that the silk thread drainage counteracted the edema is additional proof that the condition is due not only to the impairment of the capillaries but to that of the lymph vessels as well.

Chirurg, Berlin

12:341-372 (June 15) 1940

- *Present Status of Surgery of Biliary Tract. F. Bernhard.—p. 341.
Discharge of Bile by Hepatocholecholecystostomy. E. Derra.—p. 358.
Gas in Biliary Calculi: Star-Shaped Areas of Lesser Density in Roentgenogram. W. Abel.—p. 360.
Stenosis of Pylorus Caused by Unusual Course of Ligamentum Teres Hepatis (Round Ligament). J. Volkmann.—p. 363.

Surgery of Biliary Tract.—Bernhard feels that cholecystostomy has been overshadowed by cholecystectomy. Recently the pendulum has begun to swing back and some of its advantages are being once more recognized. Cholecystostomy is advisable in cases of acute cholecystitis in which, because of the impaired general condition or advanced age, a cholecystectomy will perhaps not be tolerated. Cholecystostomy has the added advantage that it can be performed under local anesthesia. It may eventually save the life of a patient with severe hepatogenic icterus in which cholangiographies have failed to induce the flow of bile. It is useful in the treatment of cholangitis or of severe jaundice caused by calculi. Cholecystostomy has been regarded by some as a method which preserves the function of the gallbladder. Cholecystography after operations revealed, however, that the function is restored in only a few cases when the operation was done for a severe inflammation. Cholecystostomy is to be regarded as an emergency operation when life is in danger. It has the disadvantage that another operation becomes necessary in from 10 to 20 per cent. With cholecystectomy, technic is of less importance than the question of whether the operation is to be performed during the acute attack or after it has subsided. The author recommends the expectant attitude, bearing in mind, however, that the liver and particularly the pancreas are involved. Severe involvement of the pancreas, which can be ascertained by determining the diastase content of the urine, may indicate a prompt operation in order to avoid further impairment of the organ, which may develop into an acute pancreatic necrosis. At the author's clinic it has been the rule to wait for the disappearance of the acute signs of inflammation, and there were no perforations or other complications. Careful observation is essential so that proper measures can be undertaken at once if acute exacerbation should set in. Many of the failures of the conservative procedure in acute cholecystitis are the result of faulty treatment. Patients with grave symptoms are given no food or fluid by mouth for the first two or even three days. Application of heat counteracts the spasms. The so-called strawberry gallbladder is difficult to diagnose. The cholecystogram is often normal, but the functional tests of the pancreas may reveal pathologic values. If the diastase content of the urine is greatly

increased in the presence of typical colics, a strawberry gallbladder is to be suspected. Conservative treatment of the strawberry gallbladder is not effective. Its presence is an indication for a cholecystectomy. Attention must be paid to the choledochus in the course of operative intervention on the gallbladder. Since external palpation of the choledochus for stones is not reliable, it has been insisted by some that the duct be opened and explored. The author thinks that this is not necessary in every cholecystectomy and that the indication for a choledochotomy may be surmised from the clinical course. He recommends cholangiography during operation to decide whether the choledochus should be opened. Stenosis of the choledochus resulting from a chronic pancreatitis or stenosis of the papilla calls for a choledochoduodenostomy. The author evaluates this and other anastomotic operations and their indications.

12:405-436 (July 15) 1940

- Technic of Combined Pleurolysis and Apical Plastics. W. Graf.—p. 405.
*Pathogenesis and Prevention of Coma of Exophthalmic Goiter. R. Herget.—p. 417.
Treatment of Tetanus and Prevention of Dangers of Serum Application in Prophylaxis and Therapy. C. Langemeyer.—p. 422.
Prophylaxis and Therapy of Tetanus. J. Csiki.—p. 427.
Tetanus in Spite of Wound Excision and of Administration of Serum. W. Haas.—p. 430.

Coma of Exophthalmic Goiter.—According to Herget the term "Coma basedowicum" (thyroid crisis) was coined by Zondek and was applied to a disorder which develops several hours or, at the latest, three days after an operation for exophthalmic goiter. The patient exhibits restlessness and incoordinated movements of the entire body. This persists for a shorter or longer period and culminates in stupor. As the stupor increases the clinical picture greatly resembles one of catalepsy or bulbar paralysis. The temperature rapidly increases to 40° C. or higher, but the surgical wound does not show reason for the rise. The heart action becomes increased, the pulse small, frequent and barely perceptible. Death nearly always takes place in the presence of signs of circulatory failure and exhaustion. The coma of exophthalmic goiter develops not only after operations on the thyroid but also after other operations and after infectious diseases. Various explanations have been given for the occurrence of the coma. The author made repeated determinations of the iodine content of the blood after thyroidectomy and found neither hyperthyroxinemia nor a hypothyroxinemia. He believes that adequate preparation for the operation by inorganic iodine is perhaps the most important factor in the prevention of the coma. The iodine medication is combined with strict bed rest, dietetic regimen and the administration of digitalis and quinine. In severe cases this preparatory treatment is followed by ligation of the superior thyroid arteries. The iodine medication is continued for another two weeks, after which the subtotal thyroidectomy is done. After the operation administration of iodine, digitalis and quinine is continued in decreasing doses. The successful treatment of the postoperative thyroid crisis consists in venesection with subsequent transfusion of blood of the same group.

Ugeskrift for Læger, Copenhagen

103:315-344 (March 13) 1941. Partial Index

- *Coxa Saltans. A. Berntsen.—p. 327.

Coxa Saltans.—Berntsen reports thirteen cases of extra-articular snapping hip. He states that the mechanism of the audible snapping is the tripping of fascia tissue (the posterior part of the iliotibial band) over the greater trochanter on movement of the joint, either because the fascia is stretched too tightly or because the trochanter extends out too far. The phenomenon is usually produced on flexion in the hip, especially on active movement. Diagnosis is made on the characteristic snap and the palpable, eventually visible, gliding over the trochanter. Roentgen examination also is necessary. The only effective treatment is operative. Of the author's cases 5 were so distressing as to indicate operative treatment. Three of the cases were bilateral. Operation, according to Payr, gives excellent subjective and objective results.

Book Notices

Pharmacology. By J. H. Gaddum, ScD., M.R.C.S., L.R.C.P., Professor of Pharmacology in the University of London. Cloth. Price, \$6. Pp. 407, with 74 illustrations. New York & London: Oxford University Press, 1940.

According to the author, this textbook is intended for "medical students at a stage in their education before general principles become obscured by a mass of practical details, but may also interest others." Dr. Gaddum has also attempted to present for medical men pertinent statements concerning the kind of evidence that justifies the clinical trial of new drugs when such trial is requested by drug manufacturers. The book contains twenty-two chapters, which discuss inorganic salts and fats of the diet, vitamins, hormones of known and of unknown structure, stimulants of the central nervous system, narcotics and other depressants of the central nervous system, body temperature (pyretics and antipyretics), sensory nerves, motor nerve endings, muscles, the alimentary canal, circulation, blood, kidney, respiration, proteins, heavy metals and metalloids, drugs which destroy life, chemotherapy and general pharmacology. The titles do not always create a clear impression as to what may be expected in subsequent reading. However, the index is sufficiently extensive to offset this fault partially.

An introduction on pharmacologic literature creates a pleasant impression in that it informs the reader where to look for supplemental reading. This advice is often lacking in textbooks on pharmacology. Another pleasing feature is the author's brief discussions of the more common tests for hormones, vitamin deficiencies and other commonly employed medicinal agents. Most of the fifteen tables present pertinent information in a manner that allows the reader to grasp in an instant the relation of the agents discussed; this is useful in the chapters on the barbituric acid derivatives, the sympathomimetic amines and the disinfectants allied to phenol. However, these features do not compensate for the weaknesses which appear to be existent. One of the most irritating practices is the author's careless use of descriptive terms. For example, in the discussion on vitamin C deficiency there appears "the strength of the capillaries is diminished and hemorrhages occur"; in a reference to the history of vitamin D and rickets the expression "started the ball rolling" is used; in myxedema the "blood is cold" and, "when the diet does not contain enough iodine, the thyroid tries to make bricks without straw and becomes distended with inactive colloid." In the discussion of the action of the parathyroid glands the author writes "The injection of parathyroid extracts (parathormone) raises the blood calcium by dissolving calcium out of the bones . . ."; and the phrase "sucking in water" is used in describing the effects of hypertonic and hypotonic solutions in the intestine and blood corpuscles. Another source of irritation lies in uncompleted pharmacologic statements; e. g., the author claims that "morphine stimulates some centers and inhibits others" and "the vasoconstrictor action of the adrenaline keeps the procaine localized and so prolongs the local anesthetic action, but large doses of adrenaline may increase the toxic action of procaine." The first question which the average student will ask when he reads these assertions will consist of the one word "Why?" An adequate explanation will have to be forthcoming from other sources.

The author states that his book is intended for medical students, but it is hard to perceive how the present edition can ever become popular with students of American schools. It is not without inaccuracies and it reads as if it had been intended for preuniversity students. Those who have a fair understanding of pharmacology may occasionally pick up a morsel of information in Gaddum's book, but the American medical student would not be satisfied to use it as an authoritative textbook. It conveys the impression that the information it contains is a combination of brief general discussions on the more common drugs and on laboratory procedures rather than a textbook on pharmacology. In the present era medical students are being taught the basic principles of the more important drugs so that a practical knowledge of therapeutics may be evolved. This compares favorably with the older practice of forcing students to memorize actions and uses and promotes a desire,

and often the necessity, of "outside" reading. Obviously, the more progressive pharmacology department will have available the majority of recent books on pharmacology and allied subjects. Gaddum's Pharmacology may thus become available to the students.

Science and Seizures: New Light on Epilepsy and Migraine. By William Gordon Lennox, M.D., Sc.D., Assistant Professor of Neurology, Harvard University Medical School, Boston. Cloth. Price, \$2. Pp. 258, with 10 illustrations. New York & London: Harper & Brothers, 1941.

This book apparently was meant for popular and medical consumption. There are two parts. Part one discusses convulsive seizures and consists of twenty chapters. Part two discusses headache seizures and consists of eight chapters. The author states that this publication can supplement the advice given by the physician or help the layman whose interest "may be a result of his desire to keep abreast of modern thought in medical matters or those who are handicapped by ill health or by popular ignorance." These thoughts are splendid if one is writing about a specific disease with specific etiologic factors. For symptoms like convulsions, on which numerous scientific contributions have been made for the past fifty years and for which, even at this date, no specific etiologic factors have been found, it is extremely questionable whether they can be discussed from a layman's point of view. The layman is not able to comprehend the various anatomic, biologic, psychologic and physiologic phenomena involved in the discussion of convulsions. He cannot classify the various types of seizures and has no training in appreciating the various etiologic factors. Why should a book for lay consumption discuss, for example, such a complicated test as the use of the electroencephalogram? How can one expect a layman to understand it when so many physicians have not had time to study this new test? Further, is this test a specific one for epilepsy? The average layman cannot understand the implications of Berger rhythm unless he is a physicist or an electrical engineer with special training. The question of Berger rhythm is not fully understood and should not be dished out as something specific. For example, it is not clear why the author, on page 19, speaks of "a cerebral dysrhythmia" being a logical substitute for the word epilepsy and then states that "the article a needs to be included because there are other cerebral dysrhythmias accompanied by symptoms which are not ordinarily classed as epileptic." For physicians this publication does not come up to the new standard textbooks or contributions on convulsive disorders and migraine.

Histological Studies on the Normal and the Irradiated Suprarenal Gland in Rabbits. Contribution to the Subject of Seasonal Changes in the Adrenal Cortex and of the Differentiation of the Cortex Cells. By Olav Torgersen. Skrifter utgitt av det Norske Videnskaps-Akademi 1 Oslo. I. Mat.-Naturf. Klasse. 1940. No. 2. Paper. Pp. 112, with 25 illustrations. Oslo: Jacob Dybwad, 1940.

This monograph represents a thesis, by the author, on his histologic studies of the normal and of the irradiated adrenals, in rabbits. It consists of eighty pages of text, fourteen pages of tables, seven plates and eleven pages of bibliography. The English translation from the original is good, although some transliteration, in places, may cause difficulty in reading if one is not familiar with languages other than English. The author reviews the literature on the normal physiology and histology of the adrenals and on experimental irradiation of the glands. His review of the literature on physiology is superficial and lacks critical interpretation; the other phases are well presented. He has emphasized the lack of control observations in the experimental work hitherto reported on irradiation; also failure to exclude seasonal variations in the cytologic inclusions of the adrenal cortex in relation to phenomena observed experimentally. Various other sources of experimental error are discussed very well. Histologic technic and technic for irradiation are well described, and the author distinguishes between primary effects of irradiation on the adrenals and secondary effects from the exposure of tissues other than the adrenals. He also has observed that while the cortical cells may show degenerative changes there is no evidence of degeneration of the medullary cells regardless of dosage of roentgen rays employed. This is of special interest in view of the practice of irradiation of the adrenals for various diseases on the supposition that epinephrine

secretion from the medullary cells can be reduced or suppressed by exposure to roentgen irradiation. The author has presented the results of his own extensive experimental studies on irradiation of the adrenals. These are illustrated in elaborate tables and with photomicrographs. His objective observations on the cytology of the rabbit's adrenals are based on well controlled experiments. The monograph should be of interest to histologists and to experimental physiologists who are especially concerned with the cytology of the adrenals under normal conditions and as affected by roentgen irradiation.

Medicine and Human Welfare. By Henry E. Sigerist, M.D., D.Litt., William H. Welch Professor of History of Medicine in the Johns Hopkins University, Baltimore. Cloth Price, \$2.50. Pp. 148, with 20 illustrations. New Haven: Yale University Press; London: Oxford University Press, 1941.

These three lectures were given by Dr. Henry E. Sigerist, who is William H. Welch professor of the history of medicine in Johns Hopkins University, as the Terry Lectures at Yale University. Dr. Sigerist is referred to by Louis Fischer in a recent volume as "a stiff-necked advocate of the Soviets." These three lectures reveal that Dr. Sigerist is an excellent historian in the field of medicine but that his information and his views regarding the practice of medicine are greatly modified by the point of view reflected in Fischer's characterization. Briefly, it is Dr. Sigerist's view that the technology of medicine has outrun its sociology and that the only way to cure the situation is to remove the doctor from the sphere of competitive business, free him from economic worries or, in other words, put him on a salary. His final chapters are an unqualified advocacy of the system of medicine established in the Soviet Union.

Toughen Up, America! By Victor G. Helser, M.D. Cloth. Price, \$2. Pp. 228. New York & London: Whitteley House, McGraw-Hill Book Company, Inc., 1941.

This is just another book giving advice on health and hygiene. It is chiefly a retelling of the well known and little heeded facts that we must eat, sleep and play in order to be healthy. Some physicians will not agree with some of the statements the author makes in suggesting certain foods for the daily diet. For example, the idea of alfalfa as a dinner vegetable will leave most persons cold. The advice given on exercise is sane, but the author should make it a bit more clear that no one should indulge in any program of exercise, even for recreation, without being certain that he has been recently examined and has no defects which might be made worse by exercise. The anecdotes of the author's experiences during his world travels are an attractive feature of the book. There are too few of these.

Mercurialism and Its Control in the Felt-Hat Industry. By Paul A. Neal, Surgeon, United States Public Health Service, et al. From the Division of Industrial Hygiene, National Institute of Health. Prepared by direction of the Surgeon General. Federal Security Agency, U. S. Public Health Service. Public Health Bulletin No. 263. Paper. Price, 20 cents. Pp. 132, with 36 illustrations. Washington, D. C.: Supt. of Doc., Government Printing Office, 1941.

This report is an excellent piece of work. Aside from the technical worth of the results obtained, the most interesting aspect of the investigation was revealed in the helpful attitude of all agencies approached. In order to conduct the survey it was necessary to secure the active cooperation of the owners and managers of the hat manufacturing plants and also of the labor union organizations to which the hatters belong. The study itself was conducted with the assistance of the Bureau of Occupational Diseases of the Connecticut State Department of Health. Local physicians practicing in the communities where these plants were located contributed their personal observations, and three state hospitals made their records available. Participation in the study must necessarily have had excellent educational effects on all these interested groups. No cases of mercurialism were found among workmen exposed to less than 1 mg. of mercury per 10 cubic meters of air. In all, 59 cases of chronic mercurialism were found among 534 hatters—something better than 10 per cent. The argument for the

substitution of a nontoxic carroting agent is obvious. Indeed, the latest bulletin from the Division of Industrial Hygiene states that pursuant to the findings in this investigation the use of mercurial carroting hatters' fur in the manufacture of hats will be prohibited as of Dec. 1, 1941. The methods for the control of mercurial vapors are outlined in the report, and medical findings are set down in detail. An interesting section of the study deals with the results of an inquiry among practicing physicians in and near Danbury. The report is a valuable addition to existing studies on industrial health problems and suggests that a worthwhile pattern has been set up for the conduct of similar investigations.

A Diabetic Manual for the Mutual Use of Doctor and Patient. By Elliott P. Joslin, M.D., Sc.D., Medical Director George F. Baker Clinic at the New England Deaconess Hospital, Boston. Seventh edition. Cloth. Price, \$2. Pp. 238, with 53 illustrations. Philadelphia: Lea & Febiger, 1941.

This volume is now in its seventh edition because, as Dr. Joslin says in the preface, "there is always something new going on in diabetes." Moreover, the number of the diabetic is increasing because people are living longer. Therefore, education for this class becomes a more important problem. This volume is fully established as a most useful book in its field. It is up to date, well printed, excellently illustrated and written with inspiration. No intelligent person with diabetes should be without it.

Diseases Transmitted from Animals to Man. By Thomas G. Hull, Ph.D., Director, The Scientific Exhibit, American Medical Association, and others. Second edition. Cloth. Price, \$5.50. Pp. 403, with 45 illustrations. Springfield, Illinois & Baltimore: Charles C. Thomas, 1941.

The first edition of this book was published in 1930. The new material developed in the past ten years makes a new edition necessary. The chapters on animal parasites, on fungous diseases and on psittacosis have been entirely rewritten and new chapters have been added on louping ill, sore mouth in sheep, equine encephalomyelitis, Rift Valley fever, typhus fever and relapsing fever. In the development of this book, Dr. Hull has called on a large list of competent consultants who have been giving special attention to the subjects discussed. The book is a handsome production, quite up to date, and scientifically dependable.

Endocrinology: The Glands and Their Functions. By R. G. Hoskins, Ph.D., M.D., Director of Research, The Memorial Foundation for Neuro-Endocrine Research, Harvard Medical School, Boston. Cloth. Price, \$1. Pp. 388, with 6 illustrations. New York: W. W. Norton & Company, Inc., 1941.

In 1903 Dr. Hoskins published a book called "The Tides of Life." The material in that work has been drawn on as the basis for the present volume, which describes for the intelligent reader, both lay and medical, our present knowledge of the glands of internal secretion. He explains with easy readability, but the reader must be prepared to study the dictionary and to acquire the necessary vocabulary for complete understanding. The book is sound in that it does not accept as conclusive some of the recent beliefs in this field, but it does give enough of the theory to indicate how the activities of the endocrine glands affect our minds, our bodies and our lives.

Strange Malady: The Story of Allergy. By Warren T. Vaughan, M.D. Cloth. Price, \$3. Pp. 268, with 7 photographs and 27 line drawings by John P. Tillery. New York: Doubleday, Doran & Company, Inc., 1941.

Dr. Warren T. Vaughan has made an excellent contribution to the dissemination of our knowledge of allergy in his medical book on the subject. This volume, which is the second in a series published under the auspices of the American Association for the Advancement of Science, reflects the information primarily for a public audience and indicates the author's great competence in writing for such a group. The illustrations, the case reports, which are more like anecdotes than case reports, and the information reflected are all just about what such a contribution should be. The book is one which may be safely recommended by any physician to an intelligent patient with allergy who wants to know what the medical profession knows about this subject.

Queries and Minor Notes

THE ANSWERS WERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

PROTECTION OF SKIN FROM CLEANING COMPOUNDS

To the Editor:—The Air Corps uses large quantities of cleaning compounds for the cleaning of airplanes and engines. A formula used for the removal of carbon from engine parts is somewhat as follows:

	Per Cent
Creosote oil (containing approximately 5 per cent of phenols).....	50
Orthotoluidine	20
Diethanolamine	10
Oleic acid	10
Ethylene glycol	10

Such a compound is commonly diluted with water or kerosene in the proportion of 1 part to 5 of diluent. Some commercially available cleaning compounds for this use contain up to 50 per cent of commercial cresylic acid. Your recommendation and suggestions are requested in regard to the caustic and irritating properties of such compounds and the maximum percentage of creosote oil and phenolic compounds, especially cresylic acid, that might be permissible. It must be assumed that workmen would have the solution in contact with the skin during working hours.

F. O. Carroll, Lieut. Col. A. C.,
Wright Field, Dayton, Ohio.

ANSWER.—All the substances mentioned in this query are direct cutaneous irritants or sensitizers for some persons. If kerosene is used as the diluent an additional exposure is introduced, since a dermatitis develops in more than 30 per cent of persons long exposed to kerosene through direct contact. If water is used in the mixture, evaporation may lead to a higher concentration of irritants than was provided in the original 20 per cent dilution. It is believed that any dilution practical in metal cleaning will exceed the threshold of strength necessary to produce cutaneous injury. Furthermore, the elimination of one or two constituents may not be expected to remove the possibilities of injury for some persons, since this would lead to increased amounts of other constituents likewise cutaneous irritants.

Exposed workers must rely largely on the wearing of gloves and aprons. Ordinary rubber garments will be softened by kerosene and possibly by other constituents. For this reason resort may be had to synthetic rubber articles, of which neoprene may prove the best type. Various substances are available for application to the skin of the hands and forearms to serve as a barrier against cutaneous irritants. Under some circumstances these protective creams are highly successful. At times the most suitable material can be determined only by trial and error. Under any circumstances workers exposed in the operation described should maintain careful hygiene of the skin, rubbing in at the end of work periods small quantities of bland ointments to replace the cutaneous fat lost through contact with solvents. Isopropyl alcohol is recognized as a solvent for removal of creosote from the skin in the prophylaxis against creosote burns.

PASSIVE VASCULAR EXERCISES

To the Editor:—May I ask your advice on various types of passive vascular exercises?

R. G. Mellen, M.D., Clinton, Iowa.

ANSWER.—There are three types of apparatus employed for passive vascular exercises: the oscillating bed, the apparatus for intermittent suction and pressure (pavaex) and the apparatus for intermittent venous occlusion. Consideration of the value of these three kinds of treatment can be placed under three headings: 1. The observations made by those who have invented or developed the specific apparatus; these are almost uniformly enthusiastic. 2. The physiologic evidence that these apparatus actually produce permanent improvement in circulation; this evidence is, for the most part, unimpressive and unconvincing. 3. Observations made relative to the clinical value of these apparatus. Opinions as to the clinical value of these methods of treatment vary greatly. The difficulty has been that other methods of treatment have been used at the same time, almost uniformly, and it is difficult to say whether the specific method of mechanical treatment or the general regimen of treatment is responsible for clinical improvement. The latter possibility seems most probable; the mechanical method of treatment has only contributed to the general scheme of treatment which has been satisfactory. It is true that the

original enthusiasm relative to these specific methods of treatment has not been maintained when more mature observations have been made over longer periods of time.

A conservative opinion is that these methods of treatment contribute some but not intensively to the successful treatment of the conditions for which they were originally devised. The following references may be of value:

- Herrmann, L. G.: *Passive Vascular Exercises*, Philadelphia, J. B. Lippincott Company, 1936.
Collens, W. S., and Wilensky, N. D.: *Intermittent Venous Occlusion in Treatment of Peripheral Vascular Disease: An Experience with One Hundred and Twenty-Four Cases*, *THE JOURNAL*, Dec. 25, 1937, p. 2125.
Barker, N. W., and Roth, Grace M.: *The Treatment of Occlusive Arterial Disease of the Legs by Means of the Sanders Vasocillator (Sanders Bed)*, *Am. Heart J.* 18: 312 (Sept.) 1939.
Allen, E. V.: *Recent Advances in the Medical Treatment of Peripheral Vascular Diseases*, *THE JOURNAL*, Dec. 30, 1939, p. 2375.

DIABETIC GANGRENE

To the Editor:—A man aged 58, married, an Indian of mixed blood, fairly well nourished and known to have diabetes, was admitted to the hospital nine weeks ago. He stated that the little toe of his left foot had become frozen one week previously. His temperature was 101 F., pulse rate 100, respiratory rate 20, blood pressure 140 systolic and 82 diastolic and his weight 150 pounds (68 Kg.). The urine gave a 4 plus qualitative reaction for dextrose. All his toes except the great toe were gangrenous, with a darkened area extending to the middle of the sole. There was subcutaneous crepitation on the ventral surface and an offensive odor. The crepitating area was lanced, and moist dressings of potassium permanganate were applied to the foot. Therapy with insulin and sulapyridine was instituted. The glycosuria was brought under control in three days. The insulin regimen three days postoperative was ten units three times a day before meals, and diet was carbohydrates and fats in the ratio of 1:2½, with 1,830 calories. Carbohydrates totaled 60 Gm., protein 60 Gm, and fats 150 Gm. A higher carbohydrate diet tried earlier was poorly handled. The gas bacillus infection did not extend after twenty-four hours of medication with sulapyridine. The toes were picked off nine days after admission. Pulsation in the dorsalis pedis artery was good throughout. Amputation in the midleg was done under spinal anesthesia twelve days after admission. There was no shock and a minimal loss of blood. One thousand cc. of a 10 per cent solution of dextrose in saline solution with 50 units of insulin was administered immediately after the operation. Retention of urine in the bladder required repeated catheterization. On the third day, after atropine, turpentine stipes and enemas of glycerin and soap had failed to relieve the condition, a retention catheter was inserted. On the first postoperative day 10 units of insulin four times a day with saccharin tea and one slice of buttered toast for meals was given. There was mild glycosuria on the evening of the second postoperative day. Fifty units was given before the last feeding. On the next day this dose was maintained for two feedings. The patient became somnolent, and the urine gave a 4 plus reaction. Altogether, 4,000 cc. of physiologic solution of sodium chloride was given at six hour intervals for the next twenty-four hours, and 10 units of insulin every hour, with half a glass of orange juice. On the next, the fourth, day this regimen was maintained. Because of the fast and feeble pulse and poor tone of the bladder, ½ grain (0.001 Gm.) of strychnine sulfate was administered every three hours. By midnight the urine was sugar free and insulin was discontinued. The subsequent course has been gratifying. The temperature was normal twenty-four hours after operation and remained so. The only clinical indication of any acidosis was somnolence. There was no softening of the eyeballs, specific odor to the breath or respiratory abnormality. Unfortunately, laboratory facilities for testing acetone and diacetic acid were not available. Can this postoperative reaction have been due to interference with utilization of the insulin and, if so, on any other known basis than operative shock with or without acidosis? What criticism may be offered at the treatment?

M.D., Minnesota.

ANSWER.—The patient recovered. It is doubtful whether the foot could have been saved under any circumstances. Decision is difficult, because the data furnished do not indicate how extensive the infection was, although it was sufficient to cause secondary gangrene of four toes in the presence of a palpable dorsalis pedis artery.

Evidently the patient had mild diabetes presumably of short duration, with good circulation in the extremities as shown by age, weight and amenability to insulin. Did the patient have a gas bacillus infection? One must remember that in diabetes it is not unusual to have subcutaneous crepitation which is due to gas-forming organisms other than the gas bacillus, and the favorable report of this case suggests this possibility. However, if the diagnosis really was a gas bacillus infection, then a guillotine amputation was indicated within twenty-four to forty-eight hours at most and not at twelve days after admission; furthermore, even at that late date a closed stump operation following a gas bacillus infection would involve too great a risk. These statements hold regardless of chemotherapy when one is dealing with a person with diabetes who has gangrene and a proved gas bacillus infection of the foot.

A preliminary diet of carbohydrates 100 to 150 Gm., protein 70 Gm. and fats 80 Gm. might have corresponded more closely to diets usually prescribed in diabetes. The insulin could be adjusted to the diet, 10 to 20 units on entrance before each of the three meals with 4 to 8 units on retiring. Subsequently

there might be a change to protamine zinc insulin, 20 to 40 units before breakfast plus crystalline insulin at the same time and temporarily, if needed, 12, 8 or 4 units also before lunch, dinner and retiring, according to whether the reaction of the urine to the Benedict test was red, orange or yellow. Soon all insulin save that given before breakfast might be omitted. On the morning of operation, if protamine zinc insulin was employed, it could have been deferred until the operation was over, or if crystalline insulin was employed the dose could have been cut in half. After the operation, every four to six hours, according to the results of the Benedict test, 12, 8 or 4 units of crystalline insulin could have been given. It might have been wiser to give 5 per cent dextrose in 1,000 cc. of saline solution twice during the day rather than 10 per cent dextrose in 1,000 cc. once. At any rate, after the administration of dextrose one should not be guided in immediate medication with insulin by the condition of the urine but should wait for a second specimen two or three hours later.

The unconsciousness could have been due to hypoglycemia despite the fact that the urine contained sugar, because the infection of the urinary tract complicated the picture, and the specimen of urine, although obtained by catheter, might not have represented the exact condition of the sugar in the blood at the same moment. Uremia, acidosis and the influence of drugs given for one reason or another must be borne in mind.

The rationale for the use of strychnine sulfate in the dose of $\frac{1}{60}$ grain and atropine in urinary retention seems uncertain. Furthermore, considering the vulnerable skin of a person with diabetes one would ordinarily hesitate to make use of turpentine stipes.

IRON ADMINISTRATION AND TESTING STOOLS FOR BLOOD

To the Editor:—In *Queries and Minor Notes* in *The Journal*, March 1, 1941, page 906, there is a query entitled "Testing Stools for Blood After Iron and Copper Administration." I would like to state that giving Blaud's pills, 5 grains (0.32 Gm.), three times daily for several weeks does not result in a positive reaction for blood in the stool with the benzidine test.

I. J. Blumenthal, M.D., Long Island City, N. Y.

To the Editor:—The query in *The Journal* on "Testing Stools for Blood After Iron and Copper Administration" reaches conclusions which are somewhat at variance with experiments which Oliver and I recently described (*J. Lab. & Clin. Med.* 26:727 [Jan. 1941]). I should be interested to know the basis for the opinion expressed.

Allen S. Johnson, M.D., Springfield, Mass.

ANSWER.—The question as to whether the stools containing iron give a positive reaction for blood with the benzidine or guaiac tests is a confused one as far as the literature is concerned. Some reputable authors state that these tests never give positive results (Todd and Sanford), whereas others state that both may give positive results (Hunter and Wheeler). Experience indicates that both tests may give a result with iron which is similar to but not quite the same as that with blood. In the guaiac test with iron, although a blue color is obtained the color does not penetrate to any extent into the ether layer and is rather transient. This is not readily confused with the reaction of blood. The benzidine, on the other hand, gives a color which is more easily confused with the reaction of blood, although it should not be mistaken for blood if one makes a direct comparison. However, since in practice it is frequently confused, the statement was made that a positive reaction to benzidine might be obtained with iron.

PHENYTOIN ADMINISTRATION AND EDEMA

To the Editor:—I have been reading about a number of unfavorable symptoms produced by phenytoin sodium in the treatment of epilepsy but have found no mention of edema in the upper or lower extremities. Does the continued use of this drug for twelve to fourteen months but never more than 6 or 7½ grains daily (0.5 Gm.) ever produce such a symptom? As long as the patient, aged 40, is on this dosage, she is free from petit or grand mal attacks, but taking her off entirely causes a return of the seizures. An opinion will be greatly appreciated.

M.D., Ohio.

ANSWER.—Edema has not been reported as a toxic symptom from phenytoin sodium, but in view of the fact that excessive growth of hair and hypertrophy of the gums are well recognized manifestations it would seem reasonable to ascribe the edema to the medication. Unless there is evidence of kidney damage it is probably not a serious matter and might be expected to disappear spontaneously, like other toxic manifestations produced by phenytoin. Systematic exercise might be recommended. Elastic bandages and massage are of course to be considered, and up to 0.1 Gm. of phenobarbital might be substituted for one capsule of phenytoin.

ESTROGENS AND CHRONIC CYSTIC MASTITIS

To the Editor:—A patient with chronic mastitis was examined by a gynecologist, who suggested dilation and curettage with insertion of a glass stem pessary into the uterus to relieve the patient of dysmenorrhea. He further stated that this therapeutic measure would relieve the patient both of her signs (lumpy breasts) and symptoms (painful breasts) of the chronic mastitis. What effect would a dilation and curettage with insertion of a glass stem pessary have on a chronic mastitis? What is the consensus as to the use of estrogens in the treatment of chronic mastitis?

M.D., New York.

ANSWER.—A dilation (with or without curettage) and insertion of a stem pessary into the cervix often relieves dysmenorrhea, but there is no reason to suppose that this procedure will have any effect on chronic cystic mastitis. At the present time there is no satisfactory endocrine treatment of chronic cystic mastitis. The use of estrogens may actually aggravate this condition. Some authorities are of the opinion that chronic cystic mastitis is the result of excessive stimulation of the breasts by estrogen. It is much more logical to use testosterone propionate for the treatment of chronic cystic mastitis, but as far as is known no endocrine therapy will overcome chronic cystic mastitis permanently.

TRAUMA AND REPEATED ABORTION

To the Editor:—A woman aged 27, two months pregnant, fell down a flight of stairs in a dark hallway. The following day she had slight vaginal bleeding, which gradually increased, and two days later passed a fetus. This occurred about fifteen months ago. She again became pregnant, and, during the fourth month of this second pregnancy, she aborted. Could this second abortion have been caused by the injury?

M.D., New Jersey.

ANSWER.—There is little likelihood that residual trauma during the first pregnancy could be responsible for the second unintentional abortion. Although the interruption of the first pregnancy followed immediately after the accident, it is entirely possible that the external trauma precipitated the event but may not have necessarily been the cause of it. External trauma rarely results in abortion. Clinical experience indicates that the incidence of repeated abortion is greater in the person who has had a previous abortion. This fact is best demonstrated in the so-called habitual aborter who has three or more gestations which end disastrously. This abortion habit may well be due to underlying physiologic or endocrinal derangement the cause of which one may or may not be able to uncover during an examination.

MIGRAINE AND DIET

To the Editor:—What is the value of diet in the relief of migraine headache? If it is of any value, what diet would you suggest?

Robert L. Davis, M.D., Holbrook, Ariz.

ANSWER.—Various diets have been recommended for the relief of migraine. Three of these are worth trial, according to the indications in the specific case. An elimination and avoidance diet is of value in cases of migraine associated with allergic phenomena and a background of allergic tendencies. The exact diet used must depend on the elimination diet revealing the culpable allergen. Wheat, eggs, cheese and chocolate are the most frequent offenders. The second diet which may be tried in any case is the low carbohydrate regimen with an avoidance of the majority of starches and sugars. A moderate diminution of the intake of fluid is occasionally helpful in such a diet. Encouraging results have been reported from strict adherence to a ketogenic diet such as would be used in the treatment of persons with juvenile epilepsy. Assurance cannot be given that any of these diets will be effective in an individual case.

EFFECT OF ESTROGENS ON MENSTRUATION

To the Editor:—What effect has the prolonged use of estrogens on menstruation? A patient having scanty menstrual periods showed a pituitary deficiency which was treated by discontinuance of theelin and the administration of anterior pituitary extract. Since receiving the extract there has been a decrease in nervousness and insomnia. There is also some decrease in the size of the thighs and the lower part of the abdomen.

M.D., California.

ANSWER.—The prolonged use of estrogens may suppress menstruation for a while as the result of their inhibitory action on the pituitary. On the other hand the administration of large doses of estrogen especially for a long time may bring about bleeding from the uterus in women who have not menstruated for years. The bleeding may occur during the administration of the estrogens or more likely when their use is discontinued.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 117, No. 11

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CHICAGO, ILLINOIS

SEPTEMBER 13, 1941

THE PERPETUATION OF ERROR IN OBSTETRICS AND GYNECOLOGY

CHAIRMAN'S ADDRESS

NORMAN F. MILLER, M.D.

ANN ARBOR, MICH.

The catastrophic events born of the present world conflict are a source of tremendous concern to us all. It is indeed a sad commentary on modern civilization to realize—as now we must—that war, an all-out tremendously destructive cataclysmic war, is still the world's answer to international difference of opinion. While our special field of endeavor may not bring us into immediate contact with the brutalities of this struggle, we as physicians are none the less conscious of increasing responsibility. Thus, we cannot fail our government in its effort to build a stronger and more modern defense. We recognize our duty in the program for improved national health, especially among women and children indirectly connected with the rearmament program. We should also recognize an increasing responsibility to medicine. Modern standards of medical care were attained through the efforts of countless physicians, scientists and others throughout the world. Now it becomes the responsibility of physicians still free to think about the future to shoulder the burden of keeping medicine on an even keel. Medical frontiers must be advanced, and gains already made must be protected. One particular aspect of this responsibility to medicine is made the theme of this address; namely, the perpetuation of error in obstetrics and gynecology.

Mistakes will be found wherever and whenever man is concerned. To err is human, but in medicine mistakes are both expensive and dangerous. In these uncertain times we may well pause long enough to reflect on our contribution to the perpetuation of error. Several circumstances combine to make our time particularly susceptible in this respect. These circumstances are:

1. The World War with its attendant distortion of mental processes.
2. Endocrinology, the beautiful romantic young maiden of modern medicine, who keeps us dizzy with her therapeutically provocative gyrations.
3. Overzealousness in the field of medical writing, the result of increasing competition and the perpetuation of a false standard for gaging a man's worth, based almost entirely on what he writes and less on his other marks of proficiency.
4. A loyal, devoted but blind adherence to obsolete ideas in both obstetrics and gynecology.

From the Department of Obstetrics and Gynecology, University of Michigan Medical School.

Read before the Section on Obstetrics and Gynecology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 5, 1941.

Keeping these four circumstantial factors in mind, let us survey the situation. It is not difficult to point out errors perpetuated by our remote predecessors. We smile, rather feelingly perhaps, over their use of powdered toads for the treatment of vesicovaginal fistula. We recognize in blood letting a mighty poor treatment for placenta praevia. The abdominal instillation of mercury bichloride solution for peritonitis probably killed more patients than it cured. More recent examples of perpetuated error are to be found in the faulty interpretation of the endometrium prior to knowledge regarding its cyclic change; the long accepted belief that ovulation occurred at the time of menstruation and that the so-called safe period constituted the week of the midintermenstrual period. As we approach contemporary obstetrics and gynecology it becomes increasingly difficult to distinguish shadow from substance.

The mistakes of today are seldom discernible until tomorrow; consequently there can be no final judgment except in the court of time. But, as I see it, we are perpetuating error, errors both hazardous and far reaching in their scope.

ERRORS THAT ARE BEING PERPETUATED

In my opinion, the following are errors perpetuated today; thus:

Forcing young men and women to write in order to achieve recognition. Laboratory and clinical research and the recording of scientific fact are important, but skill in this respect is not always a fair gage of a man's worth, nor does it indicate the sum total of his ability. The blame for the fact that we find it necessary to digest an ever increasing number of half-baked adventures in medical research should not be placed on the ambitious young man and woman striving to forge ahead but, rather, on the faulty standard which has grown up in our midst and which today serves as the principal yardstick by which we judge a man's work. The reporting of facts, whether they are derived from laboratory research or from clinical investigation, is both commendable and desirable but it should be motivated by the accumulation of interesting and important scientific data or discovery rather than by the customary desirability of quantity production. By fostering an era wherein the older, experienced men do the reading and the younger, less experienced individuals do the writing, we have accumulated a medical literature which is long on quantity and, let this be said for the young men and women, surprisingly good in quality. The error is not so much the quantity reporting as it is the motivating factor back of it.

Attaching a commanding scientific importance approaching reverence to almost any research which includes the sacrifice of a few mice, rats, guinea pigs, squirrels or what have you. Laboratory research is basic; it is fundamental for the advancement of medicine. We cannot get along without it, nor would we care to do so. Yet the mere fact that something has been injected into mice or rats and some easily misinterpreted results derived therefrom does not always imply good work or yet the conclusion that human beings similarly treated would behave rat fashion. The importance of endocrinology and the great interest now accorded it have paved the way for many flighty ideas, slipshod experimentation and faulty deductions. The urge for priority and scientific recognition has given birth to more than one regrettable incident. The laboratory worker deserves full measure of sympathetic understanding, financial support and clinical backing. Many of our most potent therapeutic aids are the product of his untiring effort. We must recognize in the laboratory worker a human being, subject to the same shortcomings that beset us as clinicians. Let him not bedevil the clinician with enticing theories inadequately founded. Ambition, enthusiasm and desire for advancement and recognition are commendable qualities when properly guided and controlled. Many tests, particularly biologic tests, and other measurements which appear so precise when seen in the written word are often crude evaluations subject to the error imposed by the human equation.

Failure to recognize fully that potent gland preparations and their synthetic substitutes may cause harm; that their exact nature and mode of action are often a matter of fanciful theory and their widespread clinical use seldom truly remedial. Endocrinology is intriguing, its contributions to modern medicine are numerous and tremendously important. The harm as well as the good accruing to womanhood in the mass experiment now carried on throughout the world is something to think about. It is something that must and will be evaluated in the future. For the development of such an important field as endocrinology one cannot always demand proof positive before approving the use of gland products, but I would insist on a reasonable indication and a justifiable basis for their administration.

The excessive evil attributed to retrodisplacements of the uterus, giving further evidence of error perpetuated. Naturally a retroverted uterus may cause symptoms and, when it does, may require correction. Most retrodisplaced uteri, however, are asymptomatic and do not call for therapy. In this day of trial and error it is just as desirable to prove the cause and effect relationship between retrodisplacement and pelvic symptoms before operating as it was decades ago.

Delaying operation in ruptured tubal pregnancy. In this age of modern surgery, hospitalization, blood banks and lyophilized serum, procrastination is no longer justifiable. Excepting delay necessitated by environmental circumstances, early operation and the replacement of blood loss are clearly indicated in all cases of ruptured tubal pregnancy.

Our generous sacrifice of the uterus, tubes and ovaries, especially in middle-aged women. Disease may necessitate extirpation of these organs, but their removal is being overdone. The ovaries are just as important for normal endocrine balance and emotional stability in the female as are the testicles in the male. The fact

that a 35 or 40 year old woman needs a hysterectomy does not necessarily justify castration. The presence of bilateral dermoid cysts in a young girl calls for more than surgery. It also demands conservation of healthy ovarian tissue if this is at all possible. Tubal pregnancy and ovarian hemorrhage due to rupture of a graafian follicle or corpus luteum cyst do not always require oophorectomy. But it is neither necessary nor desirable to confine this discussion to gynecology, for error is also perpetuated in the major division of our specialty.

PERPETUATION OF OBSOLETE STANDARDS

In obstetrics we are still bound by tradition and guilty of perpetuating obsolete standards. How?

By allowing that good obstetric care can be cheap. It isn't and it cannot be cheap. Insurance companies allow the magnanimous sum of \$25 for months of antepartum supervision, confinement and postpartum care. Patients, organizations, supervisors and even health authorities who should know better allow as little as \$15 for the same service. They expect good care and generally get it. But, though the exchange of legal tender may be small, some one, often the practitioner, pays for the services rendered. Obstetric care based on present day standards requires a surgical environment and equipment, adequate assistance and mature obstetric judgment. These things cannot be obtained or maintained cheaply.

By favoring home confinement even when hospital delivery is available. I recognize that home delivery will remain a necessity for many years to come. Indeed, in some communities we may never get entirely away from it. In decrying this traditional method, in urging a newer and higher standard of obstetric care based on modern physical and scientific possibilities, I am not overlooking the fact that in the sparsely populated, rugged country of the frontier mother and among the extremely poor, especially in the rural areas of the South where there are neither hospitals nor good roads, the problem is indeed a real one. Much has been accomplished in these areas. More will be done in the future. But the fact that newer standards may not now appear attainable in these areas should not deter us from seeking the best for the parturient woman. The handicapped communities need our understanding and help, but they should not set the standard of quality for obstetric practice. Of course patients can be delivered in the home, and safely too, provided the necessary skill and equipment are made available. Surgery was formerly conducted in the home, but, unhampered by the shackles of tradition and guided by wise and forceful leaders, surgery moved on to its present high plane. Many of the arguments used to bring the surgically sick patient to the hospital can be applied and with equal justification to the obstetric patient. In voicing the belief that a properly equipped hospital is the place for a woman to have her baby, I should like to emphasize that properly equipped means a great deal more than the facilities offered by the average small community hospital today. Four walls and a light do not make a delivery room, and not every man with an M.D. is an obstetrician. Safety is not the only advantage of a properly conducted hospital delivery. There are in addition the change of environment, relief from home pressure and worry and mental and physical relaxation.

which is quite as important after nine months of pregnancy and hard labor as it is after many surgical operations.

By failing to recognize that student home delivery training and the certification of skill as indicated by a passing grade and graduation from the medical school contribute abundantly to the disrespect commonly displayed for obstetrics. Unconsciously, perhaps, the student comes to look on obstetrics as something he must take in his stride, something he masters early in his training on the way to bigger and better things. All physicians, young and old, good and bad, are, in the present way of things, permitted and expected to do obstetrics, but only the select, only those who have taken special postgraduate training, are freely granted the right to perform tonsillectomies, perineorrhaphies and hemorrhoidectomies.

By emphasizing the dangers associated with delivery on the one hand and frowning on short hospitalization on the other hand.

By emphasizing the time factor as the chief criterion in what constitutes the commonly accepted standard for normal labor. This leads to unwarranted and sometimes harmful intervention. The quality and frequency of the pains as well as the total duration in hours must all be considered in setting up an acceptable standard for normal labor.

Other things which may fall into the category of error are the innocuousness of premature rupture of the membranes as a means of inducing labor; the hazards of dry labor; insistence that only the low flap cesarean technic is correct for placenta praevia; interruption of pregnancy for pulmonary tuberculosis; myomectomy during pregnancy.

You may not agree with the views here expressed, but you cannot deny the challenge of the principles involved.

WHAT TO DO ABOUT IT

What shall we do about the perpetuation of error in obstetrics and gynecology? How can we best discharge our responsibility to medicine in this connection? I believe we should reaffirm and when necessary revise basic principles underlying accepted obstetric and gynecologic practice. We must shake off the stifling influence of tradition and reevaluate common procedure in the light of modern knowledge and present day possibilities. If we recognize our responsibility and accept this challenge, if we are unafraid and willing to think and plan in terms of a newer and better standard of medical care for the pregnant woman, then I foresee for obstetrics, for maternal and child health, a new and great future.

313 East Ann Street.

Self Confidence.—Emotional starvation is just as real as physical starvation. In order to grow emotionally, an individual must feel that he is a worth-while person, that he is needed somewhere by some one, that there is a place for him in his family group, in his social group, in a vocation and in the world. He must have, permeating all that he is and does, the certainty that he can confidently look himself and other people in the face. Then he knows security. Superficial observers describe it as self confidence or self respect. An individual with security might describe it as the background against which his life is lived.—Lloyd-Jones, Estlin, and Fedder, Ruth: *Coming of Age*, New York, McGraw-Hill Book Company, Inc., 1941.

QUANTITATIVE TREATMENT OF PERNICIOUS ANEMIA

RESPONSE TO INITIAL MASSIVE DOSE OF LIVER
EXTRACT IN RELAPSE

JOHN MARTIN ASKEY, M.D.

LOS ANGELES

Nine years ago Minot¹ said "Pernicious anemia like other deficient states should be treated on a quantitative basis—treatment should fill the body adequately with stores or a reserve supply of the substance." Treatment by injections of a bovine liver extract stores a deficient organ, the human liver, with a specific hemopoietic substance, which is apparently identical in normal bovine and human livers. This substance is stored in such livers and has certain specific characteristics: it is both heat stable and parenterally effective. These composite properties distinguish it from the anti-pernicious anemia material in other organs which is not effective when given by injection.² The liver of a patient who has pernicious anemia and is in relapse contains no detectable amount of this material, but after treatment with the bovine extract it yields a similar heat stable, parenterally effective substance. Since the liver is the only bovine organ that stores this particular hemopoietic substance,² it is probable that the liver is the only human organ in which it is stored.

Therefore, treatment is true substitution therapy, supplying an ultimately essential principle but doing nothing directly to remove the cause of the primary deficiency of Castle's intrinsic factor. Just how much of this essential substance the liver of the patient in relapse needs is not known. Since it contains no detectable amount, it must lack the amount stored in the normal human liver.

The chemical identity of the specific liver substance is unknown. Until it is known, the amount of hemopoietic substance in liver tissue must be expressed in units. A U. S. P. hemopoietic unit is determined by a biologic assay on a test patient in relapse. It represents the amount of liver which, given daily, has produced a satisfactory hemopoietic response. The number of U. S. P. hemopoietic units per hundred grams of bovine liver is fairly constant, averaging about 10 to 15 U. S. P. units.³ The amount of hemopoietic substance in normal human liver in U. S. P. units has not yet been determined. My associates and I are conducting such biologic assays at present. By inference, if 1,500 Gm. of beef liver stores from 150 to 225 U. S. P. hemopoietic units, normal human liver should store a corresponding amount. This should represent approximately the amount lacking in the liver of a patient in relapse. This storage deficit, plus the amount needed immediately by the body for tissue repair, should represent probably a total bodily requirement of the liver principle of from 100 to 300 U. S. P. hemopoietic

The materials used in this study were furnished by Eli Lilly & Co. Drs. Burrell O. Raulston and Edwin E. Osgood assisted in the preparation of this paper.

From the Department of Medicine, University of Southern California School of Medicine, and the Los Angeles County Hospital.

1. Minot, G. R.: The Importance of the Treatment of Pernicious Anemia on a Quantitative Basis, *J. A. M. A.* **99**: 1906-1908 (Dec. 3) 1932.

2. Dakin, H. D.; Ungley, C. C., and West, Randolph: Further Observations on the Chemical Nature of a Hemopoietic Substance Occurring in Liver, *J. Biol. Chem.* **115**: 771-791 (Oct.) 1936.

3. Strauss, M. B.; Taylor, F. H. L., and Castle, W. B.: Intramuscular Use of Liver Extract: Maximal Responses of Reticulocytes from Daily Intramuscular Injection of Extract Derived from 10 Grams of Liver, *J. A. M. A.* **97**: 313-314 (Aug. 1) 1931. Murphy, W. F., and Howard, Isabel: The Use of Concentrated Liver Extracts in Pernicious Anemia, *ibid.* **112**: 106-110 (Jan. 14) 1939.

units. Although these amounts are necessarily approximate, the discrepancy between this apparent quantitative need of the body and the amount usually considered adequate in treatment⁴ is so great that certain questions are unavoidable. Is the treatment that

such a considerable deficiency? Why should not a massive dose be given at once to replenish the liver?

To answer these questions, the following precise investigations must eventually be made. The storage deficit of the liver of the patient in relapse must be

Response of Nineteen Patients in Relapse to Massive Doses of Liver

Age	Sex	Liver Extract, Estimated Hemopoietic Units	Initial Red Blood Cells, Millions	Months After Injection				Months to Relapse	Condition on Admission	Clinical Improvement
				1	2	3	4			
38	♀	200	0.7	4.72	5.08	4.43	3.21	4	Extreme weakness; unable to walk; no cord changes; blood trans- fusion	Excellent
76	♀	220	1.78	4.84	5.00	5.44	5.39	5; red blood cells, 3.6 million	Third relapse; cord changes; anginal syn- drome; hypertension	Excellent; angina relieved
65	♂	200	2.9	4.25	4.5	4.23	3.7	4	Several relapses; no cord changes	Excellent
64	♂	150	1.4	3.90	4.7	4.1	....	3; slight return of paresthesia	Ataxia; posterior column changes	Excellent; paresthesias returned at 3d month, so was given liver
61	♂	200	2.7	4.36	5.1	5.4	....	3 plus, now in 4th month	Dyspnea, palpitation; paresthesia, ataxia	Excellent
68	♂	380	1.42	4.79	5.2	6.0	6.1	10; red blood cells, still 5.87 million, but return of paresthesias	Posterolateral sclerosis for 6 years; used crutches 1 month, bed for 2 months before admission	Excellent
59	♂	400	1.35	2.69	4.3	4.3	Sick with influenza; no blood count	6; red blood cells, 3.6 million, appet- ite poor	Ataxia; posterior column changes; edema of legs and scrotum	Excellent; edema disappeared
70	♂	400	0.95	3.96	4.7	4.9	4.74	6 plus; red blood cells, 4.15 million in 6th month	Ataxia; posterior col- umn changes; in institution 4 years before for psychosis	Excellent; appar- ently normal
61	♀	380	1.14	3.28	4.28	4.5	5.4	5; red blood cells, 4.12 million, but less strength	Unable to walk; pos- terior column changes	Excellent; doing housework
38	♀	400	1.15	4.40	6.0	5.6	5.4	9 plus, red blood cells, 4.3 million in 10th month; no complaints	Unable to walk; pos- terior column changes	Excellent, doing housework
53	♂	400	1.31	3.87	5.1	4.3	Not located	Not located after 3d month	No cord involvement	Excellent until 2d month when typhus fever developed
37	♂	400	0.5	4.1	6.0	6.4	Not located	Not located after 3d month	In several institutions for psychosis for 8 years; in extremis; blood transfusion	Excellent; at work, apparently normal
56	♀	300	2.8	4.45	5.6	4.17	4.9	Given liver by mis- take at 4th month	Ataxia, posterior col- umn changes; hyperten- sion; coronary sclero- sis, several relapses	Excellent for 1 year with treat- ment; died of coro- nary thrombosis
68	♀	300	1.1	3.8	4.48	4.7	....	3 plus; in 4th month no complaints	Ataxia; posterior col- umn changes; temper- ature 102.1°; acute bronchitis 14 days	Excellent, ataxia and paresthesia gone at 1 month
76	♀	300	2.3	3.9	4.9	4.5	3.32	4; paresthesias; fatigue	Several relapses; ataxia; posterior column changes; crutches used for several years	Excellent; ataxia much better
84*	♀	300	2.4	4.2	4.8	5.5	6.23	4 plus; in 5th month no complaints	Pernicious anemia since 1934, pellagra developed in last year; ataxia, posterior column changes	Excellent, pellagra lesions gone in 2 months, ataxia improved
66	♂	400	1.53	3.23	3.6	3.4	....	No complete hemato- logic remission	Extreme weakness; shock, blood transfusion; no cord lesion	Excellent clinical response save for blood
66*	♂	300	2.3	3.6	3.8	3.9	....	No complete hemato- logic remission	Ataxia; posterolateral column changes	Good; not the quick subjective pick up of others
86	♀	200	2.4	4.1	3.74	3.6	...	No complete hemato- logic remission	Ataxia; posterior col- umn changes; senile arteriosclerosis	Excellent for 1 month, 3d month paresthesias returned
Average 61	..	304	1.69	4.03	4.75	4.70				

* These patients received solution liver extract purified (Lilly) 15 U S. P. units to the cubic centimeter. All others received reticulogen (Lilly) estimated at 20 U. S. P. units to the cubic centimeter. Reticulogen contains 100 international units of vitamin B₁₂ per cubic centimeter in addition.

is considered adequate for Addison's pernicious anemia in relapse adequate in meeting the storage deficit? Why should relatively small doses of liver be given daily for a period of from one to two weeks in the face of

established by direct quantitative assay of a normal human liver rather than by inferential analogous data. The amount present in the normal liver should represent the amount lacking in the liver of the patient who has pernicious anemia and is in relapse. If the deficit is large, massive dosage will be justified.

⁴ Solutions for Parenteral Administration, Dosage, in New and Nonofficial Remedies, Chicago, American Medical Association, 1940, pp. 327-330.

Whether massive doses are stored or partially excreted must be determined. Direct proof must await the opportunity to use the livers of patients treated with massive doses for quantitative biologic assays. In this way the amount of storage from a single massive dose may be determined. Indirect estimation of the degree of storage after massive treatment is possible only by observing the response as indicated by changes in the blood. The length of time during which the blood level remains normal after a massive dose should reflect the amount of storage. This report deals with the response of patients in relapse to massive doses of liver extract.

During the last three years, 22 patients who had pernicious anemia and who were in relapse have been treated with massive doses of liver extract, given on two successive days. In most instances the amount given was considered to be in excess of that which might be stored in the liver. Nineteen of these patients have been followed for at least three months, and the results obtained are recorded in the accompanying table. In 12 of the 19 the initial red blood cell count was between 1 and 2 million; in 7 it was between 2 and 3 million. The average age was 61 years, the range being from 37 to 86 years. There were 10 men and 9 women. These patients were in severe relapse and 7 had had several relapses due to inadequate treatment. Three needed immediate transfusions because of dangerously low blood volume; several presented the signs of severe cord damage. Arteriosclerosis was common. Two had previously been admitted to institutions because of psychosis, prior to recognition of the pernicious anemia.

An initial dose of 1 cc. of reticulogen-Lilly or solution liver extract purified-Lilly⁵ was given intramuscularly to detect any latent sensitivity. The next day the massive dose was given into the buttocks. The total dosage varied between 10 and 20 cc.; a total equivalent to from 150 to 400 U. S. P. hemopoietic units. No other liver was given parenterally or orally during the observation period which followed.

Of the patients who were followed during a period of three or more months, the average erythrocyte count at the end of one month was 4.05 million, at the end of two months 4.75 million and at the end of three months 4.70 million. The 3 whose counts remained below 4 million at the end of two months were a woman aged 86 and 2 men aged 66. By roentgenologic study 1 of the men was found to have indications of an intrinsic duodenal lesion. The other man presented evidence of extensive cord damage and gave a history of previous hematemesis. Complicating bleeding gastrointestinal lesions were not excluded in the last 2 patients. The clinical responses of the other 16 were excellent and the hemopoietic response was good.

Arbitrarily, a decrease of the red blood cell count to less than 4 million was considered evidence of a relapse. Any increase of paresthesia or definite loss of strength was considered as indicating a relapse, regardless of the blood count. As already noted, 3 of the 19 failed to have a count of 4 million at the second month following the initial massive dose. Of the remaining 16 patients 1 was found to have relapsed at three months, 3 at four months, 2 at five months, 2 at six and 1 at ten months after the initial treatment. Seven still have red blood cell counts above 4 million, 4 at

three, 1 at four, 1 at six and 1 at nine months after the initial treatment.

A favorable or unfavorable response could not be predicted on the basis of age, degree of arteriosclerosis, amount of involvement of the nervous system or number of previous relapses. The best hemopoietic result was obtained in a patient who had been crippled for six years. Ten months after treatment, although his erythrocyte count was 5.87 million, liver extract was readministered because of increased paresthesias. The poorest result was in an 86 year old woman; however, a good response was obtained in 2 other aged women, 1 aged 76 who had severe arteriosclerosis, hypertension and angina pectoris, and the other aged 84 who had had several relapses and who was suffering with coexistent pellagra.

COMMENT

Recently, the treatment of pernicious anemia in relapse has tended toward large doses, far above the amount needed for a satisfactory blood response. The amount of liver extract required to produce a satisfactory response of the blood in the average patient is said to be 1 U. S. P. unit a day. Thus liver containing 60 U. S. P. units would be an adequate dose to be used during a period of two months in the average patient. Both West⁶ and Haden⁷ advocate liver containing more than 300 U. S. P. units for such a period, to be given in twenty or more injections. Osgood⁸ states that any error in treatment should be on the side of excess. Such material in excess of the amount needed for a satisfactory blood response is directed at producing adequate storage, which should mean normal storage. Optimum results should be obtained by a continuous normal storage, with a normal amount of the liver principle available to the body at all times. This can be possible only if the liver is normally or completely stocked. In relapse, when the liver is apparently totally depleted, treatment should be directed at a quick restoration of the deficient material. The criteria for adequate treatment should be such as would guarantee that the liver in relapse would be stocked quickly to capacity. Such standards have not as yet been determined. The present standards for adequate treatment are satisfactory only for the elevation and maintenance of the blood count.

No precise data are available on which to establish a dosage which will assure in relapse a quick optimum liver storage. No precise data are available on which to establish a dosage in remission which will be adequate to maintain an optimum liver storage. Maintenance doses are defined in terms of maintenance of a normal blood count and of nonprogression of neurologic signs and symptoms, not in terms of maintenance of optimum liver storage. Minot¹ believes that a satisfactory blood response probably can be elicited and maintained without any assurance that the liver is stored to capacity.

Biologic assays made of the livers of treated patients with normal blood have been qualitative tests. They are proof only that enough of the hemopoietic principle has been stored to cause a maximum reticulocyte count in from seven to ten days. This would be only 7 to 10 U. S. P. units.

5. Solution Liver Extract Purified-Lilly—15 U. S. P. units per cubic centimeter; reticulogen is estimated to contain 20 units per cubic centimeter; in addition it contains 1,000 international units of vitamin B₁₂ per cubic centimeter.

6. West, Randolph, in discussion on Treatment of Blood Disorders. Conferences on Therapy by Members of the Departments of Pharmacology and of Medicine of Cornell University Medical College and the New York Hospital, J. A. M. A. **115**: 41 (July 6) 1940.

7. Haden, R. L.: Principles of Hematology, ed. 2, Philadelphia, Lea & Febiger, 1940, p. 194.

8. Osgood, E. E., in discussion on papers of Rosenthal, Murphy and Howard and Fowler and Barer, J. A. M. A. **112**: 114 (Jan. 14) 1939.

Adequate nutrition of nerve tissues is assumed if the blood is normal in the number and size of the red blood cells. Since such a normal blood count gives no assurance that the liver is stocked to capacity, it can hardly be an acceptable criterion for the optimum response of nerve tissue.

One must ask how near the reserve supply is to normal. The problem in treatment is to determine the original deficit in liver storage, how quickly it can be corrected and what maintenance dose is needed to keep the liver stored to capacity. This probably will be an individual matter, even as the need for liver varies from one patient to another. The same dose of liver extract conceivably might maintain a normal blood count with no liver storage in 1 patient, as pointed out by Minot,¹ or might maintain a normal count and establish considerable storage in another patient. The amount of the reserve supply effected in the patient should be indicated by the duration of the remission after administration of liver is stopped.

Strauss² has reported a study of 15 patients who had pernicious anemia of an apparently equal and mild degree. They had been maintained at a level of 4.5 million red blood cells for several years by a monthly dose of liver containing 10 U. S. P. units. The liver was stopped and they were allowed to have a relapse. Despite the maintenance of a normal blood level in each of these patients as a result of the small doses, the length of time during which remission was maintained after liver therapy was discontinued was from two to twenty-seven months. If the period between the discontinuance of therapy and the relapse is accepted as a measure of the amount of storage of the essential substance in liver extract, then the experience of the patients in this group is an excellent demonstration of variations which may be expected, at least when similar amounts of extract are administered.

Twelve of these patients were then given 160 U. S. P. units during a period of one week and again allowed to have a relapse.

The length of time required to produce the second relapse was the same as that observed in the first experience for 6 patients but greater in 5. In only 1 was the time between therapy and relapse greater when the first plan of treatment was used. These data suggest that greater liver storage had been effected by the large dose than by the repeated small doses. At least the storage was not less, and it was accomplished quickly. The great variability of storage in apparently adequately treated patients appears to be significant.

Of our 19 patients who were treated when they were in relapse, 16 had remissions of an average of several months' duration after a single massive dose of liver extract.

Our data fail to answer several questions. Could not a smaller amount have produced the same results? This must be determined. Would not the amount of liver used have maintained a normal blood count longer if given at intervals in small doses? Undoubtedly this is true, but I feel that the liver would not have been stored to capacity.

Our results indicate that the majority of patients in relapse can be given a single massive dose which will establish and maintain a normal blood count with satisfactory clinical improvement for several months. These

data also indicate that the liver storage deficiency may be largely replenished by an initial massive dose. Since the object is to keep the liver in a state of optimum storage, injections at long intervals following the first injection would not be advisable. Replacement of utilized material should be made at regular and not at infrequent intervals. Monthly injections of suitable amounts would seem sufficiently frequent.

Further data are necessary to determine the amount of the initial dose needed to effect complete liver storage in the individual case and the dose needed to maintain complete liver storage. Investigation in the future must be directed at determining how quantitatively to correct the fundamental deficiency in the disease rather than how to correct the symptoms and signs.

CONCLUSION

1. Satisfactory clinical, hematologic and neurologic responses, judged by available criteria, were obtained in 16 of 19 patients who had pernicious anemia and were in relapse as a result of the injection intramuscularly of a massive dose of liver extract.

2. A massive initial dose to stock the liver, followed by monthly doses to maintain adequate storage, appears to be sufficient to give optimum results in the majority of such patients in relapse.

1930 Wilshire Boulevard.

VITAMIN DEFICIENCIES AND THE SMALL INTESTINE

THOMAS T. MACKIE, M.D.

NEW YORK

Functional changes in the small intestine demonstrable by roentgen examination were first noted in a case of nontropical sprue.¹ Shortly thereafter they were observed to occur in chronic idiopathic steatorrhea,² in association with the mixed deficiency states complicating chronic ulcerative colitis³ and in tropical sprue.⁴ They have likewise been shown to occur in infantile celiac disease.⁵ It is of interest that, although all these conditions may be and often are accompanied by a macrocytic anemia, the characteristic changes in the small intestine have not been observed in pernicious anemia.⁶

The deficiency pattern of the small intestine, however, may occur in a variety of conditions, as nephrosis and diabetes insipidus,⁷ icterus with absence of bile from the intestine,⁸ diseases of the mesenteric lymphatics, and intra-abdominal cancer. It is probably significant that exactly the same pattern is presented by the intestine

From the Gray Service of the Roosevelt Hospital, Read before the Section on Radiology at the Ninety Second Annual Session of the American Medical Association, Cleveland, June 5, 1941.

1. Mackie, T. T. Non Tropical Sprue, *M. Clin. North America* 17: 165-184 (July) 1933.

2. Snell, A. M., and Camp, J. D.: Chronic Idiopathic Steatorrhea. Roentgenologic Observations, *Arch. Int. Med.* 52: 615-629 (April) 1934.

3. Mackie, T. T., and Pound, R. E.: Changes in the Gastrointestinal Tract in Deficiency States with Special Reference to the Small Intestine. A Roentgenologic and Clinical Study of Forty Cases, *J. A. M. A.* 104: 613-618 (Feb. 23) 1935.

4. Mackie, T. T.; Miller, D. K., and Rhoads, C. P.: Sprue. Roentgenologic Changes in the Small Intestine, *Am. J. Trop. Med.* 15: 571-589 (Sept.) 1935.

5. Golden, Ross. The Small Intestine and Diarrhea, *Am. J. Pediatr.* 26: 892-901 (Dec.) 1936.

6. Golden, Ross. Abnormalities of the Small Intestine in Nephrosis and Diabetes. Some Observations on Their Physiologic Basis, *Radiology* 30: 262-286 (March) 1941.

7. Fendergrass, E. P.; Ravdin, I. S.; Johnston, C. J., and Holter, P. J.: Studies of the Small Intestine. II. The Effect of Prolonged Various Pathologic States on the Gastric Emptying and the Small Intestine Pattern, *Radiology* 26: 651-652 (June) 1936.

8. Gutzeit and Kuhlbaum. Ueber die Darmmotilität beim Ikterus. *Munchen med. Wchnschr.* 81: 1095-1092 (July 20) 1934.

9. Strauss, M. B., and Pohle, F. J.: Duration of Remissions in Pernicious Anemia with Liver Therapy: Effect of Massive Doses Administered at One Time, *J. A. M. A.* 114: 1318-1320 (April 6) 1940.

of the normal newborn infant.⁹ In the experimental animal these changes have been produced by lowering the plasma proteins by plasmapheresis.⁹ It is obvious, therefore, as Golden⁶ has pointed out, that the roentgenologic findings alone do not permit an accurate differential diagnosis. However, when they are considered together with the clinical picture, the significance of the changes in the small intestine will be evident in most cases.

The deficiency pattern is not accompanied by extensive or advanced anatomic changes in the small intestine. In the earlier reports of the pathology of experimentally produced deficiency states in animals and of certain conditions complicated by deficiency disease in man, emphasis was laid on atrophy of the intestinal wall, ulceration and cellular infiltration. More carefully controlled studies, particularly the avoidance of postmortem autolytic changes and recognition that the atrophy of the intestine is part of the general wasting process of inanition rather than a specific response, have invalidated much of this.¹⁰ In our own³ early studies microscopic examination of sections from 4 cases showed only edema of the mucosa and submucosa and slight infiltration by mononuclear wandering cells and round cells. In addition to these changes, varying degrees of muscle fiber degeneration occur, and vacuolization of cells in both the myenteric and submucosal plexuses has been observed.⁶ It is obvious that such changes must adversely affect intestinal motor physiology and it is logical that the resulting disturbances may be permanent when cellular degeneration is extensive.

When the deficiency pattern of the small intestine was first described, evidence relating it to avitaminosis was incomplete, based in part on association with the general clinical phenomena of mixed deficiency states and in part on response to therapy. Thus in our first reports we did not feel justified in exceeding the statements "They are constantly present and most marked in the cases showing advanced deficiency states. In the milder cases the parallelism is not exact. While the evidence does not warrant definite conclusions, the observations suggest that these changes in the small intestine are related to the deficiency states and perhaps play a role as a conditioning factor in their development"³ and "The intensity and extent of the abnormalities in the small intestine vary directly with the severity of the clinical picture in sprue, and they regress under specific therapy. It is suggested that they may play a part in the defective absorption or utilization of essential food factors."⁴

Since that time more conclusive evidence has been obtained. The specific therapy of sprue referred to consisted of the parenteral administration of heavy dosage of crude liver extract, a well recognized and rich source of vitamin B complex.

The deficiency pattern has been observed to develop in dogs maintained on a B deficient diet.¹¹ In such animals administration of thiamine and riboflavin is said to be ineffective, while nicotinic acid caused some improvement but was less effective than the whole vitamin B complex.¹²

In studies of mixed deficiency states in man previously published we were unable to establish a correlation between the occurrence of the changes in the small intestine and the levels of the plasma protein and chloride, the presence of gastric hypoacidity or anacidity, or the concomitant existence of demonstrable gastrointestinal food allergy. There likewise was no significant correlation with the fasting blood levels for carotene, vitamin A or ascorbic acid. Clinical evidence of vitamin B complex deficiency, however, was noted in a high proportion of the cases yielding positive roentgen findings.¹³ In experimentally induced B complex avitaminosis in man, Elsom observed the development of delayed gastric emptying, reduced motility of the small intestine and increased caliber of the jejunal loops. Neither thiamine nor riboflavin significantly altered these findings. Marked improvement occurred, however, following the administration of yeast.¹⁴

Although the exact mechanism underlying these changes has not yet been demonstrated, the evidence is suggestive. The intestine of the normal newborn infant presents the picture seen in deficiency states in the adult. After the first few months of life the normal adult pattern appears. Although incomplete anatomic development of the myenteric plexus has not been shown, it is well established that the normal adult function of the nervous system is not achieved until some months after birth. The presence of the positive Babinski sign is an illustration. It would appear probable, therefore, that in the early months the intrinsic nervous mechanism of the intestine is incompletely developed or incapable of performing normal adult function, thereby producing the intestinal roentgenologic pattern of the infant. This probability is supported by the demonstration of degeneration of the intramural nerve cells in the intestine of a human adult suffering from deficiency disease.

It is well established that the function of nervous tissue may be impaired by avitaminosis and that this does not necessarily imply anatomic change. Although certain functional changes responding rapidly to therapy may be ascribed to thiamine deficiency, it has not been proved that neural degeneration is produced by lack of this factor.¹⁵

It would appear therefore, as Golden has suggested, that the deficiency pattern of the small intestine is to be explained by interference with intramural nerve function. This is probably the expression of a vitamin B complex deficiency which may or may not be accompanied by degeneration of the intrinsic nervous system. The response to therapy necessarily will depend on the relative predominance of functional or structural change.

The development of these changes in the small intestine is accompanied by defective absorption of the products of digestion. In sprue and in idiopathic steatorrhea, fat absorption is blocked. Likewise in sprue large amounts of liver extract by mouth are frequently ineffective, whereas parenteral administration of much smaller quantities of the same preparation is followed by

9. Barden, R. P.; Thompson, W. D.; Ravdin, I. S., and Frank, I. L.: The Influence of the Serum Protein on the Motility of the Small Intestine, *Surg., Gynec. & Obst.* **66**: 819-821 (May) 1938.

10. Mackie, F. P., and Fairley, N. H.: Morbid Anatomy of Sprue, *Indian J. M. Res.* **16**: 799-826 (Jan.) 1929.

11. Heublein, G. W.; Thompson, W. D., Jr., and Seully, J. P., quoted by Golden.

12. Crandall, L. A., Jr.; Chesley, F. F.; Hansen, Donald, and Dunbar, Jean: The Relationship of the P-P Factor to Gastrointestinal Motility, *Proc. Soc. Exper. Biol. & Med.* **41**: 472-474 (June) 1939.

13. Mackie, T. T., and Mills, M. A.: Changes in the Small Intestine Associated with Deficiency Disease, *Am. J. Digest. Dis.* **7**: 480-484 (Nov.) 1940.

14. Elsom, K. O.; Levy, F. H., and Heublein, G. W.: Clinical Studies of Experimental Human Vitamin B Complex Deficiency, *Am. J. M. Sc.* **200**: 757-764 (Dec.) 1940.

15. Meiklejohn, A. P.: Is Thiamine the Antineuritic Vitamin? *New England J. Med.* **223**: 265-273 (Aug.) 1940.

dramatic improvement.¹⁶ Oral dextrose tolerance tests produce an abnormally small rise of blood sugar, while the intravenous test yields a normal curve.¹⁷ Direct measurement of the rate of disappearance of dextrose from the intestine in deficiency disease likewise has demonstrated a retarded rate of absorption,¹⁸ and similarly the absorption of potassium iodide may be greatly delayed.¹⁹

The concept that multiple physiologic disturbances occur in the presence of avitaminosis is in keeping with present knowledge of the function of the vitamins. Until comparatively recently the vitamin deficiencies were considered largely in terms of anatomic pathology, and disturbances of physiology considered specific for the individual food factors.

These earlier concepts have been and are progressively being modified by research in nutrition and biochemistry. It is evident now that the vitamins play an essential role in the metabolism of all living cells by virtue of their function as the prosthetic or chemically active fraction in the coenzyme systems necessary for normal intracellular metabolism. This is particularly true of the B complex group, of which thiamine, riboflavin and nicotinic acid amide have been definitely shown to act in this fashion. The chemical structure of pyridine and of vitamins E and K is such as to render such action probable. Lacking these substances, cellular metabolism is impaired and function altered. The resulting intracellular functional disturbance, however, for the most part cannot be ascribed to deficiency of a particular single factor. Thiamine presents the most notable exception because of its intimate relation to the metabolism of carbohydrate. In the absence of this substance pyruvic acid and lactic acid accumulate in the blood, and the response to insulin is diminished.

Both chemical and clinical evidence indicate that these functions of the vitamins are so closely interrelated that insufficient supply of one may impair the utilization of others and that in consequence there is no disturbance of function which can be ascribed strictly to the specific effect of a single deprivation.

It follows as an obvious corollary that when intracellular metabolism is disturbed there must be a concurrent effect on particular tissues and physiologic systems of tissues. It is evident that the avitaminoses must exist at two levels. The first, that of disturbed physiology, accompanies the earlier stages of interference with the chemical processes of the cells. Symptoms may be produced and certain physiologic disturbances may become evident. Physical signs, however, which depend on structural alteration will be absent. When the deficiency is more severe or of sufficiently long duration the second level is reached, that of anatomic change, which is manifest in the classic physical signs of advanced vitamin deficiency disease. The concept of avitaminosis at the physiologic or subclinical level adequately explains the variety of clinical conditions in which the deficiency pattern has been observed.

The prevalence of these changes immediately raises the question of the incidence of avitaminosis. Much attention has been directed recently to the average American diet. It is becoming increasingly apparent that primary dietary deficiencies are far more prevalent than is generally believed. This is in large part attributable to the very high per capita consumption of refined starches and sugars which yield no vitamins and yet increase the physiologic requirements for them. Moreover, preliminary studies strongly suggest that many therapeutic diets are inadequate to fulfil the nutritional requirements of the healthy adult, to say nothing of the individual whose vitamin requirements are increased by the elevated metabolism accompanying fever.²⁰ The incidence is still further augmented when the varied conditions capable of producing secondary or conditioned deficiencies are considered.

SUMMARY

In our experience the roentgenologic changes in the small intestine included in the term "deficiency pattern" have proved of great value in the clinical management of certain cases. When considered in the perspective of the whole clinical picture they have definite diagnostic significance.

Since it has been observed that these changes vary directly with the severity of the clinical condition and regress to a variable degree under specific therapy, they afford a means of evaluating the efficacy of the therapeutic regimen and they likewise afford evidence of prognostic significance.

CONCLUSIONS

1. Characteristic roentgenologic changes are demonstrable in the small intestine in the presence of deficiency states.
2. Since these changes are present in the newborn infant and disappear in the early months of life, and since degeneration of the nerve cells of the myenteric plexuses in an adult presenting the deficiency pattern has been demonstrated, it is probable that they result from interference with the intrinsic nervous mechanism of the small intestine.
3. The deficiency pattern may be produced in animals and man subjected to experimental B complex deficiency. When occurring naturally it is accompanied by a high incidence of clinical indications of B complex deficiency. If irreversible changes have not occurred it responds to the therapeutic administration of heavy dosage of the B complex in the form of crude liver extract or yeast. It does not respond to thiamine, riboflavin or nicotinic acid and consequently must depend on some factor in the vitamin B complex other than these substances.
4. The deficiency pattern is accompanied by interference with the function of absorption and may therefore contribute to the establishment of an ascending spiral of progressing deficiency disease.
5. The deficiency pattern when considered with the whole clinical picture may have both diagnostic and prognostic significance.

16 East Ninetieth Street.

16. Castle, W. B.; Heath, C. W., and Strauss, M. B.: Observations on the Etiologic Relationship of Achylia Gastrica to Pernicious Anemia: IV. *Am. J. M. Sc.* 182: 741-764 (Dec.) 1931.

17. Thaysen, T. E. H.: Nontropical Sprue: A Study in Idiopathic Steatorrhea, Copenhagen, Levin & Munksgaard, 1932.

18. Groen, Juda: The Absorption of Glucose from the Small Intestine in Deficiency Disease, *New England J. Med.* 218: 247-253 (Feb. 10) 1938.

19. Heath, C. W., and Fullerton, H. W.: Rate of Absorption of Iodide and Glycine from the Gastrointestinal Tract in Normal Persons and in Disease Conditions, *J. Clin. Investigation* 14: 475-481 (July) 1935.

20. Mackie, T. T., and Dr. Hart, D. L.: A Nutritional Study of Hospital Diets, *J. Am. Hosp. Assoc.* 2: 106-114 (Feb.) 1941.

THE SMALL INTESTINE IN VITAMIN B DEFICIENCY

ROSS GOLDEN, M.D.
NEW YORK

The association of abnormalities of the small intestine with nutritional disorders in which vitamin deficiency plays a part has been pointed out by a number of writers. Mackie¹ in 1933 mentioned such abnormalities in a case of sprue. In a series of cases of "chronic steatorrhea" Snell and Camp² in 1934 described dilatation, hypomotility and smoothing or exaggeration of the mucosal contours in this portion of the digestive tract, changes which were readily demonstrable by the use of a barium sulfate meal. Similar observations were made by Mackie and Pound³ (1935) in a series of cases of tropical sprue; by Mackie, Miller and Rhoads⁴ (1935) in ulcerative colitis; by Pendergrass and Comroe⁵ (1935) in a case in which there was chemical and clinical evidence of hypocalcemia, and by Golden⁶ (1936) in infantile celiac disease. Snell and Camp expressed the belief that these abnormalities of the small intestine were probably not characteristic and could be produced by other conditions. Their prediction has proved correct. They noted also that proper treatment was followed by a change in the intestinal pattern toward the normal.

After these earlier contributions, continued study of the small intestine by roentgen methods has shown that analogous changes of varying degree may be discovered in patients with abdominal symptoms but without the usual clinical manifestations of recognized vitamin deficiencies, as well as in patients with recognized visceral disease, such as peptic ulcer. Appropriate treatment is followed by improvement in the intestinal picture. Repeated observations during treatment have given important information concerning the evolution of these changes, which will be discussed further hereafter.

The purpose of this paper is to review briefly the observations which have been made on the small intestine in a series of more than 100 cases in which some deficiency condition appeared to play either a major or a minor part. Unfortunately, at present the only evidence of accuracy of a diagnosis of vitamin deficiency is the patient's response to specific treatment, in particular by the vitamin B complex, which can hardly be considered positive proof in the scientific sense, although the clinical result is satisfactory.

The term "deficiency state" is used in a broad sense to mean a lack of some important substance, such as a vitamin or a protein, which is necessary for the proper functioning of the organism.

From the Departments of Radiology of the Presbyterian Hospital and of Columbia University College of Physicians and Surgeons.

Read before the Section on Radiology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 5, 1941.

1. Mackie, T. T.: Nontropical Sprue, *M. Clin. North America* **17**: 165-184 (July) 1935.

2. Snell, A. M., and Camp, J. D.: Chronic Idiopathic Steatorrhea, *Arch. Int. Med.* **53**: 615-629 (April) 1934.

3. Mackie, T. T., and Pound, R. E.: Changes in the Gastrointestinal Tract in Deficiency States, with Special Reference to the Small Intestine: A Roentgenologic and Clinical Study of Forty Cases, *J. A. M. A.* **104**: 613-618 (Feb. 23) 1935.

4. Mackie, T. T.; Miller, D. K., and Rhoads, C. P.: Sprue: Roentgenologic Changes in the Small Intestine, *Am. J. Trop. Med.* **15**: 571-589 (Sept.) 1935.

5. Pendergrass, E. P., and Comroe, B. I.: Roentgen Study of the Gastrointestinal Tract in Chronic Idiopathic Adult Tetany, *Am. J. Roentgenol.* **32**: 647-656 (May) 1935.

6. Golden, Ross: The Small Intestine and Diarrhea, *Am. J. Roentgenol.* **36**: 892-901 (Dec.) 1936.

Deficiency states may conveniently be divided into two groups, (1) primary and (2) secondary. A primary deficiency is one which occurs without obvious cause, in which a chronically deficient diet may be a factor, e. g. sprue or pellagra. A secondary deficiency is one which is associated with, or perhaps caused by, recognizable disease of the alimentary tract, such as cancer or regional enteritis.

TECHNIC

Abnormalities of the small intestine are often recognizable incidentally during the usual roentgen procedures intended primarily to disclose disease of the stomach and the duodenum. They are best shown, however, by a special procedure which I have come to call a "small intestine study." This, in brief, consists of a series of roentgenograms of the abdomen taken at approximately half-hourly intervals after the ingestion by a patient of a barium sulfate suspension in the morning during fasting. At present I am using 4 ounces (120 Gm.) of chemically pure barium sulfate in physiologic solution of sodium chloride made with distilled water. The usual observations of the stomach and the duodenum may be made at the beginning if desired. The films are developed and inspected immediately, and the routine is modified if it seems advisable. Fluoroscopic examinations are made two or three times during the procedure, usually with pressure films of the terminal part of the ileum or of other parts if indicated. Food is usually given at five hours, or earlier if the barium has entered the cecum. The series is concluded within five or six hours, or sooner if all the needed information has been obtained.

NORMAL SMALL INTESTINE

It is obviously necessary for the observer to be thoroughly familiar with the appearance of the normal small intestine. A review of its anatomy and physiology has been given elsewhere⁷ and cannot be repeated here. The essential points are summarized in figure 1.

ABNORMALITIES OF SMALL INTESTINE IN DEFICIENCY STATES

The abnormalities of the small intestine associated with vitamin deficiencies appear to vary with the severity and duration of the disorder. Under treatment they may begin to change promptly, but the improvement in the roentgen appearance of the small intestine usually lags behind the clinical improvement in the patient.

It is difficult to illustrate the abnormalities described, as one roentgenogram cannot reproduce the impression obtained from a series on the small intestine. To show some of the elements which go to make up the whole picture, selections of a portion of the intestine from a number of cases are shown in figure 2.

MOTILITY

1. *Hypermotility*.—In the earlier, less advanced stages the barium sulfate may be passed rapidly through the jejunum, reaching the lower part of the small intestine in a quarter of an hour and entering the cecum in less than half an hour. Occasionally the opaque material seems to rush through the jejunum and slow up markedly after reaching the proximal part

7. Golden, Ross: Abnormalities of the Small Intestine in Nutritional Disturbances: Some Observations on Their Physiologic Basis (Carman Lecture). *Radiology* **36**: 262-286 (March) 1941.

of the ileum. Sometimes it is propelled ahead so rapidly that the upper loops of the jejunum are never outlined satisfactorily.

2. *Hypertonicity*.—In the earlier stages the lumen is often reduced to one half, one fourth or even less of its normal width. This is often most noticeable in the middle third of the small intestine but is present in the upper loops of the jejunum, usually associated with hypermotility. Sometimes the opaque material seems to be propelled forward through a narrow tube, as the wall ahead of the wave of contraction is not relaxed as it normally is; after the wave passes the lumen remains narrow.

3. *Hypomotility*.—In the more advanced stages the movement of barium sulfate through the intestine is slow; it may not reach the cecum in six hours or longer.

4. *Hypotonicity (Dilatation)*.—The lumen of the intestine in the advanced stages may vary from normal



Fig 1.—The normal small intestine. The barium shadow is even in width except where a contraction happens to be taking place. The peristaltic constrictions are usually short, and the wall behind them relaxes promptly. The jejunal shadow averages a little wider than that of the ileum. The mucosal folds in the jejunum are relatively high, giving it the characteristic feathery appearance. The folds are regular in width, spacing and height, they are usually 1 to 2 mm wide and 1 to 3 mm apart. Farther down in the intestine the folds become lower and farther apart but are no wider. The iliac margins often appear smooth, but low mucosal folds can usually be demonstrated by pressure films.

The rate of transit of the saline solution barium sulfate meal is from one to five hours, the average being from two to four hours. Eating is normally followed by increased motility of the small intestine.

size to more than twice normal width. Dilated loops are characteristically seen in the well advanced stages, usually called nontropical sprue and adult celiac disease.

5. *Abnormal Segmentation*.—Areas of spasm of variable length narrow the lumen in places, sometimes completely expelling the opaque material from the contracted area and giving the appearance of discrete masses. In the advanced stages, e. g. in nontropical sprue, these filled segments are usually wider than the normal lumen and are usually associated with hypomotility. In the earlier stages the masses of barium sulfate are shorter and may be the width of the normal lumen but are often narrower; this appearance may be called hypertonic segmentation. The masses of opaque

material, whether large or small, may be well rounded but are often fusiform. Fluoroscopic examination reveals considerable, if not continuous, activity and a quick movement of the areas of contraction back and forth, with little forward progression of the barium sulfate. Pressure on a distended quiescent segment may result in an immediate contraction and a shifting of the opaque material. Segmentation is usually more pronounced in the middle third of the intestine and in the less advanced stages, and in patients responding to treatment it may be present only in this region.

6. *Scattering Effect*.—In some cases, as the main masses of barium sulfate pass along, small irregular masses linger behind and give small shadows of irregular size and shape. These shadows may remain for some time scattered along the course of the intestine, usually in the upper loops. This effect seems to be due in part to a disturbance in the function of the circular muscle and in part to a disturbance in the movement of the mucosa which depends on the muscularis mucosae. The shadows are irregular in size and contour because of the irregularity of the mucosal contours. A fine, regular scattering of barium sulfate in the normal mucosal folds of the jejunum is occasionally seen, particularly if the stomach empties slowly, and is not easily confused with the irregular shadows characteristic of this phenomenon.

7. *Gas and Fluid Levels*.—In many cases gas is present in considerable amounts, which is interpreted by Pendergrass⁸ as a manifestation of a disturbance in the ability of the mucosa to absorb gas. In more advanced stages gas and fluid levels on plain abdominal roentgenograms may suggest the possibility of ileus (Kantor⁹).

MUCOUS MEMBRANE

1. The mucosal folds may be greatly reduced in number or, in the well advanced stages, may be completely obliterated, giving the wall a perfectly smooth appearance. This phenomenon is best seen in the jejunum and cannot be demonstrated in the lower part of the ileum. With appropriate treatment the mucosal folds reappear.

2. The mucosal folds may be "exaggerated," that is, abnormally wide and irregular in width, height and spacing. In the earlier stages they sometimes appear as low, rounded indentations in the margin of the barium shadow. Exaggeration may be present in the middle loops, while those higher up may appear normal. At necropsy in 1 case exaggeration of the mucosal folds was associated with atrophy of the mucosa.⁷

DELAYED APPEARANCE OF ABNORMAL PHENOMENA

In occasional instances the mucosal folds of the jejunum may appear normal on the first two or three films, and then the irregular arrangement appears. Similarly, the appearance of segmentation may be delayed; this has been noticed in a typical case of sprue after improvement under treatment.

EFFECT OF TREATMENT

Except in cases of the most advanced, severe vitamin deficiency appropriate treatment is followed by improvement in the function of the small intestine, as manifested by roentgen examination. In the more advanced stages mucosal folds reappear on previously

8. Pendergrass, E. P.: Personal communication to the author.
9. Kantor, J. L.: The Roentgen Diagnosis of Idiopathic Sprue and Allied Conditions. *Am. J. Roentgenol.* 41: 759-778 (May) 1941.

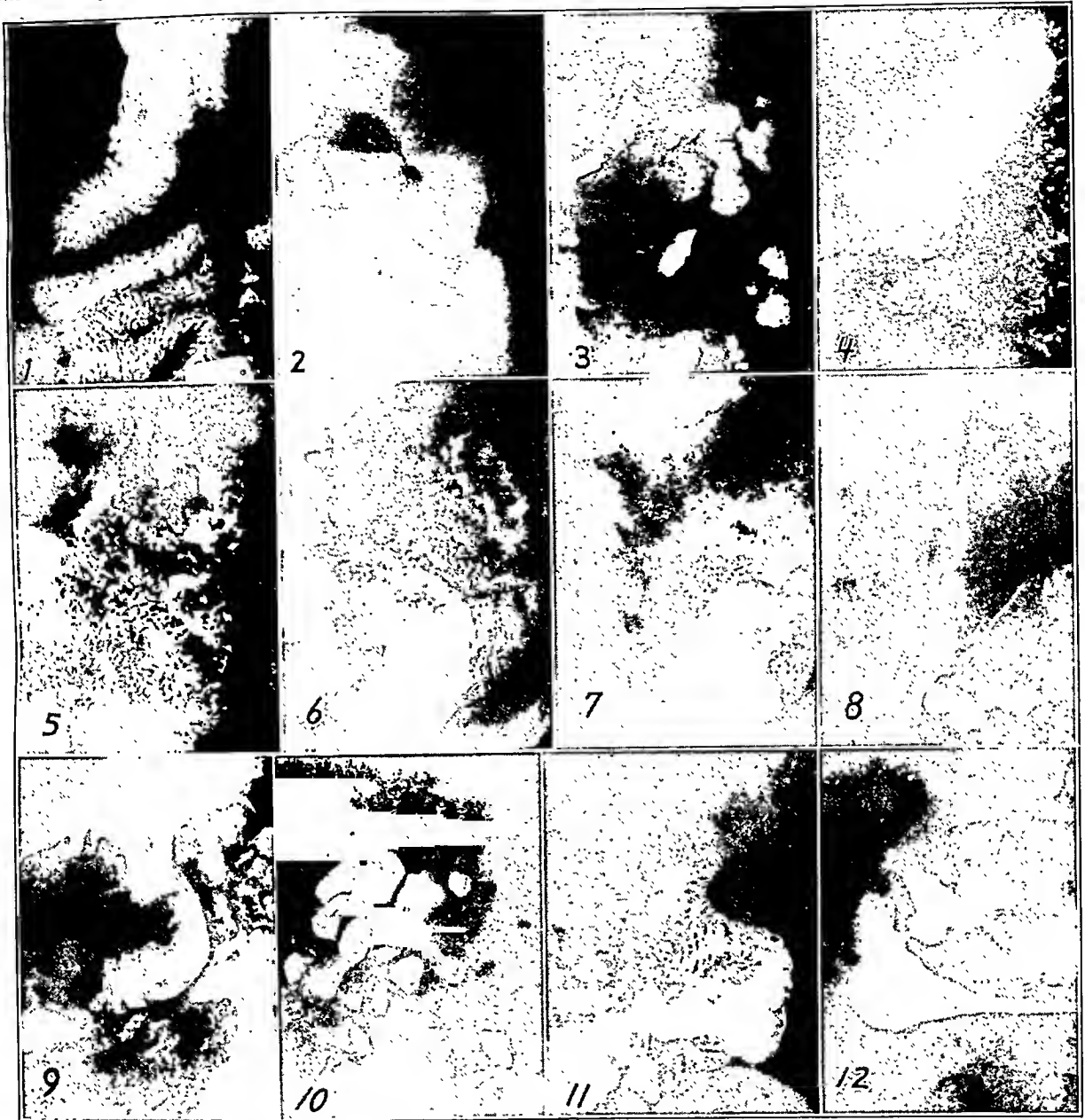


Fig. 2.—Abnormal small intestinal loops associated with vitamin B deficiency. It is impossible to reproduce with one roentgenogram the impression given by an entire "small intestine study." Selected loops are used to illustrate some of the appearances described in the text. Interpretation of the separate roentgenograms:

1. Normal jejunal loops, showing a normal contraction, in which the mucosal folds run parallel with the long axis of the intestine. The contraction is short, and the lumen on each side of it is normal in caliber.
2. Obliteration of the mucosal folds of the jejunum with dilatation and with gas and fluid levels in so-called nontropical sprue.
3. Segmentation in the upper part of the jejunum, reduction in the number and coarsening of the folds and hypertonicity of some loops. The subject, a Negress aged 39, complained of nausea and abdominal distress for one year. Administration of the vitamin B complex by mouth was followed by only slight improvement. Complete relief occurred about two weeks after the beginning of intramuscular injections of liver extract.
4. The "scattering effect," with a dilated segment of jejunum. The patient, a girl, had celiac disease as an infant and died at the age of 21 years of malnutrition, after a month of intractable diarrhea. At necropsy exaggeration of the mucosal folds of the jejunum, atrophy of the mucosa and submucosal edema were observed.
5. Decided hypertonicity of jejunal loops, with the "scattering effect." The patient, a Puerto Rican youth aged 19, had diarrhea for seven years, with mild atrophy of the tongue.
6. Pronounced hypertonicity and irregularity of caliber and of the mucosal folds of the jejunum. The patient, a woman aged 35, was put on a strict diet for duodenal ulcer. A year later she began to have pain in the lower part of the abdomen and diarrhea.
7. Intestine of the same patient three months after a high vitamin diet was instituted. The jejunal pattern is much improved. One hour after this roentgenogram was taken, however, the jejunum showed moderate segmentation and irregularity of the mucosal folds, the "delayed reaction" mentioned in the text.
8. Coarsening and irregularity of the mucosal folds, with irregularity in the caliber of a loop of jejunum running parallel with the spine. The patient, a surgeon in the late forties, had cramping abdominal pain at frequent intervals for two years, with moderate loss of weight. A large six hour gastric residue was found, without ulcer or other evidence of pyloric obstruction. The symptoms disappeared promptly after the administration of liver extract by mouth.
9. Irregularity in caliber and in the mucosal pattern in the upper jejunal loops in a case of mild sprue and anemia.
10. Segmentation in the proximal part of the ileum at three and one-half hours. The patient, a hospital secretary aged 31, complained of fatigue, cramps in the lower part of the abdomen and distention for several months. Administration of the vitamin B complex by mouth was followed by prompt disappearance of the symptoms and improvement in energy and endurance.
11. Irregularity in the mucosal pattern of a jejunal loop, a residual abnormality after the patient had improved with vitamin B therapy. Later the loops apparently became normal. The patient, a woman aged 29, was admitted because of periumbilical and epigastric pain, with a loss of 20 pounds (9.1 Kg.) in three months.
12. Irregularity in caliber and partial obliteration of the mucosal folds of a loop of the proximal part of the jejunum of the same patient. Although the patient became symptom free, this loop has remained persistently abnormal after two years.

smooth jejunal walls, hypotonicity decreases and segmentation gradually diminishes. In the earlier stages the exaggerated, irregular mucosal folds become regular and even. Segmentation disappears first in the upper third of the intestine and later lower down. Hypomotility may be followed by hypermotility, particularly of the jejunum, with a subsequent return to normal limits in the rate of movement of intestinal contents. In the cases of far advanced deficiency states I have been able to follow, complete restoration of the intestine to normal has not occurred.

LOCALIZATION OF MOST MARKED AND PERSISTENT CHANGES IN THE MIDDLE THIRD

Segmentation, even in the well advanced stages of vitamin deficiency, is often more marked in the middle third than in the upper loops of the small intestine. Improvement under treatment is first seen in the upper loops of the jejunum and develops more slowly lower down. The upper third may apparently return completely to normal while a portion of the middle third remains abnormal. In the cases of early, mild vitamin deficiency—mild as far as intestinal manifestations go—segmentation may be found only in the middle third. In some cases the patient may recover completely as far as symptoms are concerned, but persistent abnormalities may remain in the middle loops. One patient, followed for three years, although symptom free on a normal diet without an excessive intake of vitamins, has two or three abnormal loops in the middle of the small intestine, the appearance of which would justify a diagnosis of regional enteritis. Apparently permanent damage may be done to the small intestine even in cases of vitamin deficiency not severe enough to produce the typical picture of one of the recognized clinical entities.

DISTURBANCE IN GASTRIC PHYSIOLOGY

Slow emptying of the stomach is frequently found in well marked primary deficiency states. A good sized six hour residue of barium sulfate may be present, with sluggish, ineffective peristalsis and often with antral spasm. This has been present in some of my cases of early as well as of advanced vitamin deficiency and has disappeared quickly after the beginning of vitamin therapy.

PATHOLOGY

Information concerning the pathologic changes in the small intestine in deficiency states unfortunately is scanty and somewhat contradictory for the advanced stages and is not available concerning the earlier stages. In both experimental animals and in human beings the changes are variable. In fatal cases, atrophy of the tunica muscularis and of the mucosa, edema, round cell infiltration and fibrosis of the submucosa and ulceration have been described. A biopsy specimen from the smooth jejunum of a patient with typical nontropical sprue, taken when the patient was improving under treatment, disclosed degenerative changes in the fibers of the tunica muscularis and muscularis mucosae and degeneration of nerve cells in both the myenteric and the submucosal plexuses.⁷

MECHANISM OF ABNORMALITIES OF THE SMALL INTESTINE

The propulsion of intestinal contents is a function of the longitudinal and circular coats of the tunica muscularis. The contraction of the circular muscle, manifested by narrowing of the lumen, is accompanied by a contraction of the longitudinal muscle which cannot be

detected by the appearance of the barium shadow. The abnormal motility phenomena—the segmentation, changes in tone and disturbances in time of transit—must be due to defective response of these muscle coats to the normal stimulus of intestinal contents.

The mucosal folds of the normal small intestine are able to change direction within peristaltic contractions and may be temporarily obliterated over a short segment which is distended with opaque material. The formation of folds, therefore, seems to be independent of the tunica muscularis and must be a function of the muscularis mucosae.¹⁰ Abnormalities in the mucosal contours must be attributed to the inability of this muscle to respond as usual to normal stimuli. In the far advanced stages, in which the jejunal walls are smooth, proper treatment may be followed by reappearance of the folds, indicating a return of function of the muscularis mucosae, but the folds may not be normal in height or spacing.

NONSPECIFICITY OF INTESTINAL DISTURBANCES

The changes described in the roentgen appearance of the small intestine occur in conditions other than vitamin deficiency, the most important being diseases associated with hypoproteinemia (e. g. nephrosis¹¹) and with disorders of the liver.¹² The roentgen appearance of the small intestine of dogs with experimental hypoproteinemia (Barden and co-workers¹³) is indistinguishable from that of dogs with vitamin B deficiency (Heublein, Thompson and Scully¹⁴). Submucosal edema seems to be present in all these conditions and may be an important factor by interfering with the nutrition and function of the intramural nerve cells.

The intestine of the normal newborn infant shows a typical "deficiency pattern"—absence of mucosal folds, segmentation, variability in the caliber of the lumen and hypomotility—which disappears during the first four or five months. Persistent segmentation was noted in the intestine of a normal rat when the animal was enraged; at another observation, when the rat was calm, the intestine appeared normal.⁷

A POSSIBLE COMMON MECHANISM

As similar disorders of the motor phenomena of the small intestine are associated with a number of different and apparently unrelated conditions, are present in the normal newborn infant and can be produced by anger in the normal rat, it would seem that some common mechanism must be present through which these effects are produced. The nerve impulses which affect the tunica muscularis arise in or are routed through the myenteric plexuses and those affecting the muscularis mucosae and the epithelium through the submucosal ganglions. Damage to or interference with the function of this elaborate nervous system within the wall would hamper all the physiologic processes under its control.

10. Gray's Anatomy (ed. 23, Philadelphia, Lea & Febiger, 1936) on page 1163 states, referring to the jejunal folds, "unlike the folds in the stomach, they are permanent, and are not obliterated when the intestine is distended." That this conception may be incorrect is suggested by the change in direction of the folds within a peristaltic contraction and by the obliteration of the folds in a short segment of barium distended jejunum, which not infrequently can be seen on routine roentgenograms of the intestine.

11. Pendergrass, E. P.; Ravdin, I. S.; Johnston, C. G., and Hoyer, P. J. Studies of the Small Intestine: 2. The Effect of Foods and Various Pathologic States on the Gastric Emptying and the Small Intestine Pattern, *Radiology* 20: 651-662 (June) 1936.

12. Gutziet and Kuhlbaum: *Ueber die Darmmotilität beim Ikterus*, *Nünchen med. Wchnschr.* 81: 1095-1098 (July 20) 1934.

13. Barden, R. P.; Thompson, W. D.; Ravdin, I. S., and Frank, I. L. The Influence of the Serum Protein on the Motility of the Small Intestine, *Surg., Gynec. & Obst.* 66: 819-821 (May) 1938.

14. Heublein, G. W.; Thompson, W. D., Jr., and Scully, J. P. The Effect of a Vitamin B Complex Deficiency on Gastric Emptying and Small Intestine Motility, *Am. J. Roentgenol.*, to be published.

After a review of the evidence, which cannot be recapitulated in this paper, I⁷ recently suggested the intramural nervous system as a possible, if not the most probable, medium through which these effects are produced. By this hypothesis the apparent vagaries of the muscular disturbances, such as the slowness of recovery, become explainable as variations in the degree and extent of interference with the function of the intramural nerves, or of actual damage to these nerve cells, and in the rate of their recovery under treatment.

CLINICAL CONSIDERATIONS

A discussion of the greatly varied clinical manifestations associated with deficiency states cannot be undertaken here. Ample evidence has been presented in the literature that patients with well defined deficiency states give a history of disturbances of the digestive tract for some time before the characteristic clinical evidences of the disorder appear. Many of my patients with relatively moderate or mild disturbances of the intestinal picture have had obscure abdominal symptoms, often pain, unexplained by recognizable disease; such patients are usually thought to have a neurosis.¹⁵

It must be borne in mind (1) that a deficiency state often exists with other organic disease, (2) that the demonstration of a "deficiency pattern" does not rule out other organic disease, (3) that the symptoms of a deficiency state may be obscured by those of the primary organic disease, e. g. peptic ulcer, and (4) that the symptoms of a deficiency state may be the only manifestations of the underlying organic disease, e. g. diffuse lymphosarcoma of the intestine.

A vitamin deficiency may exist without disturbance of the small intestine. In cases of pernicious anemia, which is due to a lack of the specific antianemic factor, the small intestine appears normal on the roentgenogram. There may be similar situations at present unrecognized. The specific factor or factors in the vitamin B complex concerned with the physiology of the small intestine have not been identified with certainty. It seems possible that the lack of any factor concerned with the normal function of nervous tissue might play a part in inducing intestinal disorder; because of interference with absorption something in the nature of a vicious circle may thus be set up, which can be interrupted only by the parenteral administration of vitamins. From the clinical standpoint, it seems to be agreed that the whole vitamin B complex is necessary to relieve the abdominal symptoms.

DIFFERENTIAL DIAGNOSIS

The differentiation of the various fundamental causes of abnormalities of the small intestine is impossible at present; for example, one cannot say whether a lack of vitamins, hypoproteinemia or disease of the liver is primarily responsible. Aside from the possibility that the intramural nervous system may be the medium through which the effects are produced, the underlying mechanism has not yet been elucidated; it is not clear, for instance, how disease of the liver might be related to disturbance of or damage to the intramural nerve cells. For this reason the demonstration of the described changes in the small intestine on roentgen examination can be taken only as suggesting certain possibilities. In my cases the most common cause appears to be a vitamin B deficiency in one form or another, if clinical relief with the parenteral or the oral administration of

liver extract or the vitamin B complex may be accepted as evidence.

Little is known about the effect of allergic reactions on the roentgen appearance of the small intestine. They are likely to be manifested only when the allergen is actually present in the digestive tract and are therefore unlikely to appear when a barium sulfate-saline solution preparation is given after a twelve hour fast. Dr. Robert A. Cooke recently showed me roentgenograms of a patient allergic to milk who was given barium sulfate with milk; the result was marked segmentation of the middle loops of the small intestine. In another case of chronic diarrhea the ileum, with a water-barium sulfate meal, was found to be hypertonic and without segmentation, and the trouble was later found to be allergy to milk. In the series of cases on which these observations are based the problem of differential diagnosis of allergy has rarely come up. However, it is possible that under certain circumstances the less marked forms of the "deficiency pattern" might be due to allergy, in which case no differentiation could be based on the appearance of the barium shadows.

COMMENT

In my experience the more advanced intestinal changes previously described can be taken as strong evidence of a nutritional disturbance, usually one in which vitamin deficiency plays a part but which might be due to hepatic disease or primarily to hypoproteinemia. The milder changes, however, such as moderate segmentation limited to the middle third, without associated disturbance in the mucosal pattern, must be taken as merely suggestive of the possibility of a mild nutritional disturbance. In 1 instance I have seen such mild changes evolve into severe changes in spite of the administration of preparations of the vitamin B complex by mouth, only to regress rapidly toward the normal after the institution of parenteral vitamin therapy, and at the same time stubborn abdominal pain of years' duration disappeared. In another instance, moderate changes on roentgen examination of the small intestine for slight bleeding in the digestive tract led to the suggestion of possible hypoproteinemia, among other things; a high serum globulin content with a low serum albumin content was interpreted by the chemist as suggesting multiple myeloma, which was proved by sternal puncture.

In spite of the nonspecificity of these intestinal disturbances, they are proving helpful in the search for the cause and relief of obscure abdominal symptoms.

SUMMARY

Nutritional disorders are often associated with disturbances in the roentgen appearance of the small intestine, particularly in cases of vitamin B deficiency. The nutritional disorder may be primarily due to lack of vitamins or may be secondary to other visceral disease. The intestinal phenomena are nonspecific and may be due to or associated with a number of different conditions. It seems probable that interference with or damage to the intramural nervous system is the common mechanism by which the intestine is affected. In spite of this nonspecificity the demonstration of these changes may be in many cases the first suggestion that a vitamin deficiency may play a primary or a secondary part in the patient's condition. It is worthy of emphasis that knowledge of the physiology of the small intestine is at present incomplete.

622 West One Hundred and Sixty-Eighth Street.

15. These patients are discussed in some detail by Drs. Lepore and Golden in this issue of *THE JOURNAL*, p. 918.

A SYNDROME DUE TO DEFICIENCY OF THE VITAMIN B COMPLEX

MICHAEL J. LEPORE, M.D.

AND

ROSS GOLDEN, M.D.

NEW YORK

Progress in the recognition of vitamin B deficiency states in human beings has been hampered by the lack of simple and reliable laboratory tests. As a result, clinicians have resorted to the therapeutic trial as their main aid in the diagnosis of these deficiencies. Many worthwhile advances have been made in this way, but, because of uncontrolled variables, many errors have also been made. The "Give-a-dose, if-the-patient-feels-better-he-has-a-deficiency" school of research workers has aroused a storm of criticism, causing conservative clinicians to be extremely skeptical of their reported results. To the discerning and critical clinician it has become apparent that, in the absence of specific tests for deficiency of the various components of the vitamin B complex, reliance must be placed on other types of objective criteria and not merely on the patient's increased sense of well being. It is with this point in

The picture presented by these patients is that of a definite clinical entity which is not classic pellagra, ariboflavinosis, beriberi or sprue. The important features of the syndrome are listed in the accompanying table.

Certain facts listed in the table demand further comment.

INADEQUATE DIET

The causes for the inadequate dietaries are many and varied. Since carbohydrate is the cheapest source of energy, economic factors often dictate its role in the diet. As a matter of fact, in only 20 per cent of the cases was poverty the primary cause for the inadequate

Features of the Syndrome

History	Objective Findings
1. Inadequate diet, high in carbohydrate, poor in vitamin B complex, fat and protein	1. Flat oral dextrose tolerance curve
2. Weight loss	2. Abnormal small intestine roentgen ray appearance
3. Asthenia	3. Malnutrition
4. Anorexia	4. Hypochlorhydria or achlorhydria
5. Irritability and personality changes	5. Increased capillary fragility
6. Weakness and faintness two to four hours after meals	6. Absence of stentorria, glossitis, dermatitis or anemia of significant degree
7. Gastrointestinal complaints:	7. Eighty per cent of patients are women
(a) Flatulence	
(b) Pain	
(c) Diarrhea in 25% of cases	
(d) Constipation	

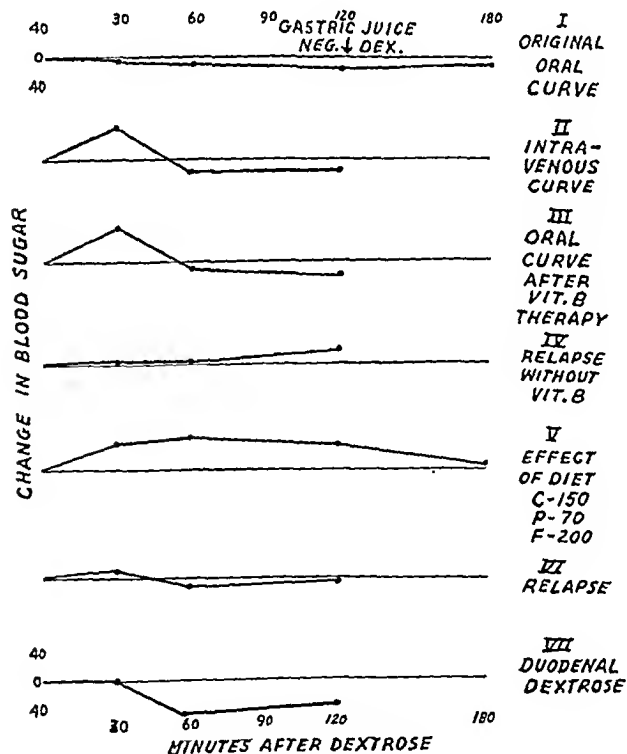


Fig. 1.—Dextrose tolerance curves of patient S. G. at various stages in the clinical course.

mind that we present this report based on the findings in a group of 30 patients seen in the Vanderbilt Clinic and the Presbyterian Hospital in New York.

Read before the Section on Radiology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 5, 1941.

From the Departments of Medicine and Radiology of the Presbyterian Hospital and of the Columbia University College of Physicians and Surgeons.

Advice and encouragement were given the authors by Dr. Walter W. Palmer. Miss Margaret Reid extended able assistance in performing the many dextrose tolerance tests, and Mrs. Rhoda Bower made the chemical studies. The Abbott Laboratories gave generously of the vitamin B products used.

diet, other factors being of much greater importance. Psychogenic causes accounted for a number of deficient diets. Faddism was responsible for several others, for the group included two vegetarians as well as a number of persons who had an excessive craving for sweets. Therapeutic diets prescribed by physicians were responsible for a significant number of cases. These diets included low fat diets for gallbladder disease, reducing diets, modified ulcer diets, and low residue and elimination diets. Voluntary dietary restrictions because of sitophobia of varying degree accounted for several abnormal diets and played a partial role in many others. Laziness was a factor, especially among white collar workers who disliked cooking and tried to manage with sandwiches, fewer meals and foods requiring less cooking.

The net result of these various factors was that the patients lived on diets high in carbohydrate and poor in vitamin B complex, protein and fat, and often deficient in calories. It is recognized that a high carbohydrate, fat poor diet increases the need for vitamin B₁ and probably for the other members of the vitamin B complex. With the diet already deficient in vitamin B this composition favors the development of vitamin B deficiency states.

WEIGHT LOSS

The incidence of weight loss in this series is high, but the amount has seldom been great. Many of these patients have always been thin and underweight. Several patients were actually obese and had suffered no weight loss.

ASTHENIA; ANOREXIA

Asthenia is a prominent symptom and has often been incapacitating, most of the patients complaining of lack of "pep" and inability to do a day's work without feeling exhausted.

Anorexia has been another important symptom favoring the perpetuation of the vicious cycle started by the inadequate diet.

IRRITABILITY AND PERSONALITY CHANGES

Personality changes have often been marked. One young woman assured us that if she had not been cured by therapy she would almost certainly have had to break up her home, because she was so cranky that she was not "fit to live with."

WEAKNESS AND FAINTNESS

Weakness and faintness coming on from two to four hours after meals are interesting symptoms, for they probably are referable to slight hypoglycemia.

GASTROINTESTINAL COMPLAINTS

The frequently encountered gastrointestinal symptoms appear vague until examined in the light of the roentgen ray appearance of the stomach and small intestine, which are to be discussed further.

The most common complaint is of gaseous, generalized abdominal distention following meals. This often causes the patient to stop eating after the ingestion of only a small portion of his meal. "Gas pains" passing along the course of the small intestine are described by many of the patients. Borborygmi are reported by almost all. Distress and pain are often localized to one abdominal quadrant. The left upper quadrant is a frequent site. The periumbilical region is a favorite. Occasionally the right lower quadrant has been involved. Food often aggravates these complaints, and soda may also aggravate them. Diarrhea occurs in one fourth of the patients in the group, but constipation is a more common complaint. One patient said he felt as though he had swallowed a pack of cigars. Incidentally, it is worth noting that several patients had found that a mild cathartic, such as magnesia magma or cascara in small doses, would often produce diarrhea lasting several days. Several others noted exacerbation of symptoms after a really small amount of alcohol. As can be seen, the picture is that of a highly irritable gastrointestinal tract which responds at times rather violently to even mild irritants.

A history of sore tongue or burning of the mouth is only occasionally obtained.

It should be stressed that these persons are ambulatory. Many are working and many have been classed as neurotics and cranks by their associates. A number are nurses and physicians who have eliminated the possibility of organic disorders to their own satisfaction and are ashamed to report their symptoms for fear that they will be called neurotic. They manage to struggle along, feeling under par, like an eight cylinder motor hitting

on four. These patients are often the bane of the existence of the physician who sees them, for the usual examination reveals nothing to account for their many symptoms. The surgeon is frequently confronted with these individuals, especially when they complain of abdominal pain, and useless operations including appendectomy and cholecystectomy have been done on several members of the group.

The history presented by these patients is, as can be seen from the preceding, not of itself typical of any one disorder. Similar symptoms are seen in a variety of diseases. Consequently, reliance must be placed on the association of these symptoms with certain objective criteria. These criteria have been enumerated in the table and merit further discussion.

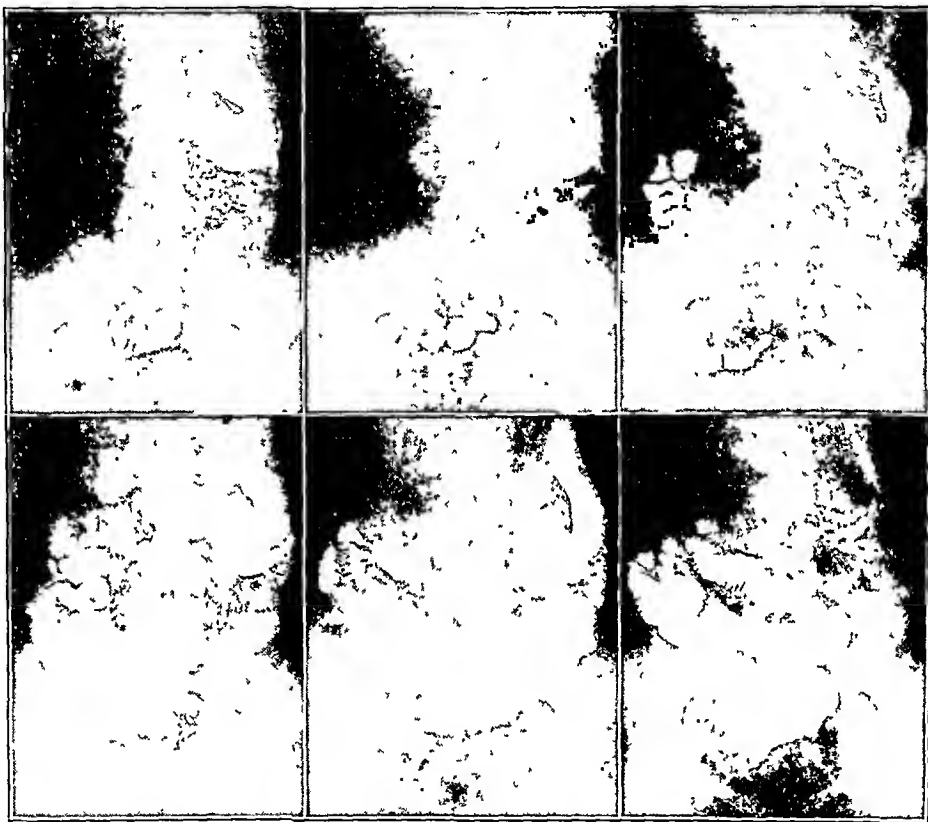


Fig 2.—Mild deficiency state with satisfactory response to oral vitamin B complex therapy. A 40 year old woman complained of epigastric distress and belching for several years without diarrhea or loss of weight. The case had been diagnosed as gastric neurosis. The sugar tolerance curve was flat. Gastric analysis revealed normal acidity. Study of the small intestine on Jan. 8, 1941 (top row, one, one and one half and two and one half hours) showed hypermotility of the jejunum, uneven caliber and uneven mucosal folds with segmentation in the proximal ileum. She was given large doses of vitamin B complex by mouth with prompt relief of symptoms and gain in weight. The dextrose tolerance curve became normal. Reexamination of the small intestine on March 27 (lower row, one, one and one half and two and one half hours) showed no abnormalities in the appearance of the jejunum with no definite evidence of segmentation.

DEXTROSE TOLERANCE

The flat oral dextrose tolerance curve is found in 28 of the 30 patients. The technique used has been described,¹ and the dose of dextrose has been 1 Gm. per kilogram of body weight. This is the dose recommended by Peters and Van Slyke² for testing carbohydrate tolerance. In no instance was vomiting induced by it. The dextrose tolerance curve has been designated as "flat or low" if the blood sugar level has not risen at least 40 mg. per hundred cubic centimeters above

1. Lepore, M. J.: The Clinical Significance of the Low or "Flat" Oral Glucose Tolerance Curve, *Ann. Int. Med.* 14: 2008-2014 (May) 1941.

2. Peters, J. P., and Van Slyke, D. D.: *Quantitative Clinical Chemistry*, Baltimore, Williams & Wilkins Company, 1931, vol. 1, p. 117.

the fasting level during the two to three hour period following the ingestion of dextrose. The average curve in this group of patients exhibits an increase of only 14 mg. per hundred cubic centimeters at thirty minutes after dextrose, 5 mg. per hundred cubic centimeters at one hour; a decrease of 0.8 mg. per hundred cubic centimeters at two hours, and a decrease of 10 mg. per hundred cubic centimeters at three hours. Blood sugar values of 60 mg. per hundred cubic centimeters were frequently encountered during the course of the tests. On three occasions blood sugar levels of 40 to 45 mg. per hundred cubic centimeters were found.

The clinical significance of the flat oral dextrose tolerance curve has been discussed elsewhere.¹ For the

McCreary⁴ have reported a flat oral dextrose tolerance curve in children with celiac disease and a normal dextrose tolerance curve in most cases when the dextrose was introduced directly into the duodenum. They claim that in this condition the flat curve is due to mechanical factors such as gastric retention. This hypothesis does not appear to hold for the adults included in this syndrome, for in the first place, the 100 per cent three hour gastric retention mentioned by May and McCreary never occurred in this group. Furthermore, it is now known that dextrose is absorbed by the stomach when introduced in the concentrations (20 to 40 per cent) used in this study.⁵ A moderate degree of antral spasm was often found, but not sufficient to cause much

retention! The patient who had the most severe gastric retention and antral spasm proved to be one of the two persons with a normal oral dextrose tolerance curve. We are studying this subject, utilizing duodenal instillation of dextrose. The data obtained so far are insufficient to justify a definite conclusion.

The influence of various factors on the dextrose tolerance curve is depicted in figure 1, consisting of dextrose tolerance curves done on the same patient at different times and under the conditions outlined. The first curve is that initially encountered when the patient exhibited the classic features of the syndrome presented in this report. Gastric juice, removed two hours after oral dextrose, was negative to Benedict's solution, indicating that no gastric retention of dextrose had occurred. The intravenous dextrose tolerance curve was normal. The patient was subsequently given adequate doses of thiamine hydrochloride, riboflavin and nicotinic acid with decided clinical improvement and a change in the dextrose tolerance curve to normal. However, since

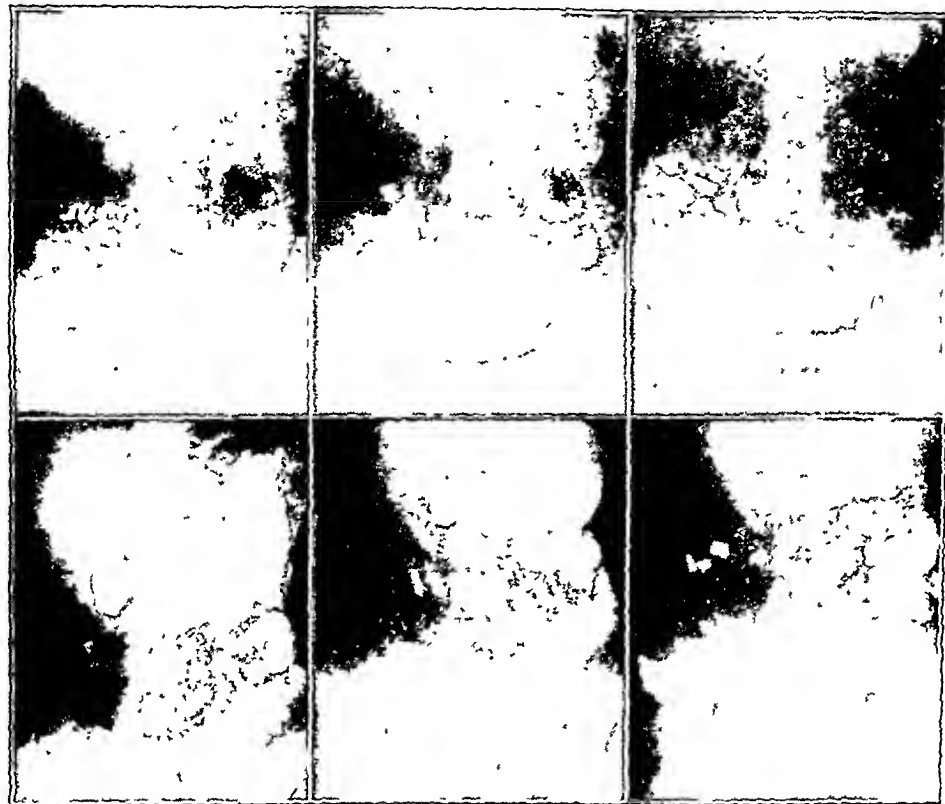


Fig 3—Deficiency state with achlorhydria with poor response to oral vitamin B complex but with excellent response to parenteral liver extract. A 39 year old mulatto woman, Feb. 1, 1938, complained of nausea, epigastric distress, weight loss and mild stomatitis. Roentgen examination of the stomach on March 1 showed nothing abnormal. A diagnosis of gastric neurosis was made. A high vitamin and high caloric diet was followed by a persistence of symptoms. In October 1940 she complained of sore gums. The dextrose tolerance curve on Oct. 9, 1940 was slightly flat. Small intestine study on October 11 (top row, one half, one and one and one half hours) showed delayed appearance of an irregular mucosal pattern and irregular caliber of the lumen of the jejunum with moderate segmentation in the upper ileum. Vitamin B complex syrup by mouth was followed by an apparent increase in symptoms. The dextrose tolerance curve on December 27 was still lower. Small intestine study on Jan. 9, 1941 (lower row) showed a definite increase in the intestinal abnormalities, particularly in the segmentation in the proximal ileum (Continued in figure 4)

present purpose, it appears that the following factors are concerned with this response:

1. High carbohydrate diet causing an acceleration in the blood sugar removal mechanism
2. Slow absorption of dextrose from the gastrointestinal tract.
3. Combinations of the preceding

As has been stated, these patients are on high carbohydrate diets, which undoubtedly play a role in the causation of the flat curve. Groen's³ direct measurements of dextrose absorption from the small intestine of adult human beings with vitamin B deficiencies have shown that absorption is retarded. May and

the patient simultaneously modified her diet, it is difficult to tell which factor caused the change. Subsequently the patient stopped vitamin B medication and ate her usual diet. The dextrose tolerance curve again became flat. She was then placed on a diet consisting of carbohydrate 150 Gm., protein 70 Gm., and fat 200 Gm., and after two weeks the dextrose tolerance test had reverted toward the normal. About one year later, despite her excellent clinical status, the oral dextrose tolerance curve was again flat. The patient had not taken vita-

3. Groen, Juda: Absorption of Glucose from the Small Intestine in Deficiency Disease, *New England J. Med.* 218: 247-253 (Feb. 10) 1938

4. May, C. D., and McCreary, J. F.: The Glucose Tolerance Test in Celiac Disease: Significance of Low Blood Sugar Curves, *J. Ped.* 17: 143-154 (Aug.) 1940.
5. Warren, Richard, Karr, W. G.; Hoffman, Olive D., et al.: Intubation Studies of Human Small Intestine: Absorption and Expulsion of Glucose from Stomach, *Am. J. M. Sc.* 200: 632-648 (Nov.) 1940.

min B supplements for many months. A dextrose tolerance test done at this time after the introduction of dextrose directly into the duodenum under fluoroscopic control revealed a flat curve.

It appears, therefore, from these studies that the flat oral dextrose tolerance curve exhibited by these patients is due to the combination of vitamin B complex deficiency and the high carbohydrate diet.

ROENTGEN CHANGES IN THE SMALL INTESTINE

The disturbances in the small intestine associated with vitamin B deficiencies and demonstrable by roentgen ray methods have been discussed by one of us (R. G.) elsewhere in this symposium and the details will not be repeated here. They seem to vary roughly with the severity and the duration of the deficiency. In brief, they consist of derangement of motility and of mucosal pattern. In the more advanced cases a slow rate of transit of the opaque material, hypotonicity, segmentation and coarsening or even obliteration of the mucosal folds, as originally described by Snell and Camp,⁶ may be found. The mucosal changes are most evident in the upper third and the segmentation in the middle third of the small intestine. With appropriate treatment the mucosal pattern in the upper jejunum returns to normal first and the segmentation diminishes but may persist in the middle third long after the patient is clinically normal. Hypomotility may be replaced by hypermotility, particularly in the jejunum. In the earlier cases the only abnormality may be segmentation in the middle third.

Information concerning the changes to be expected in the early, less well defined cases has been obtained in two ways: (1) by the repeated examination of the small intestine of well defined cases as improvement under treatment took place and (2) more recently by correlation of roentgen ray findings with clinical studies in the group of cases reported herewith.

These changes in the small intestine are not in themselves specific for vitamin deficiency. They may be present in other conditions,⁷ particularly those associated with hypoproteinemia and disorders of the liver and as a result of emotional disturbances and possibly of intestinal allergy. Because of the nonspecific nature of these manifestations, it is obvious that the causative factors can be determined only by further clinical study. However, from the clinical standpoint the suggestions

based on the roentgen findings have proved valuable. In approximately half of the cases reported herewith the possibility of a deficiency was first suggested by roentgen examination of the small intestine.

In view of the nonspecific character of the small intestine roentgen ray changes, a question might be raised as to whether in some individuals a disturbance in the autonomic nervous system is primarily responsible for the changes in the small intestine, leading to impaired absorption and dietary restriction. The vitamin B deficiency state would then follow and merely perpetuate a vicious cycle. In other words, a constitutional factor may have initiated this syndrome. Evidence has been presented elsewhere⁷ suggesting that

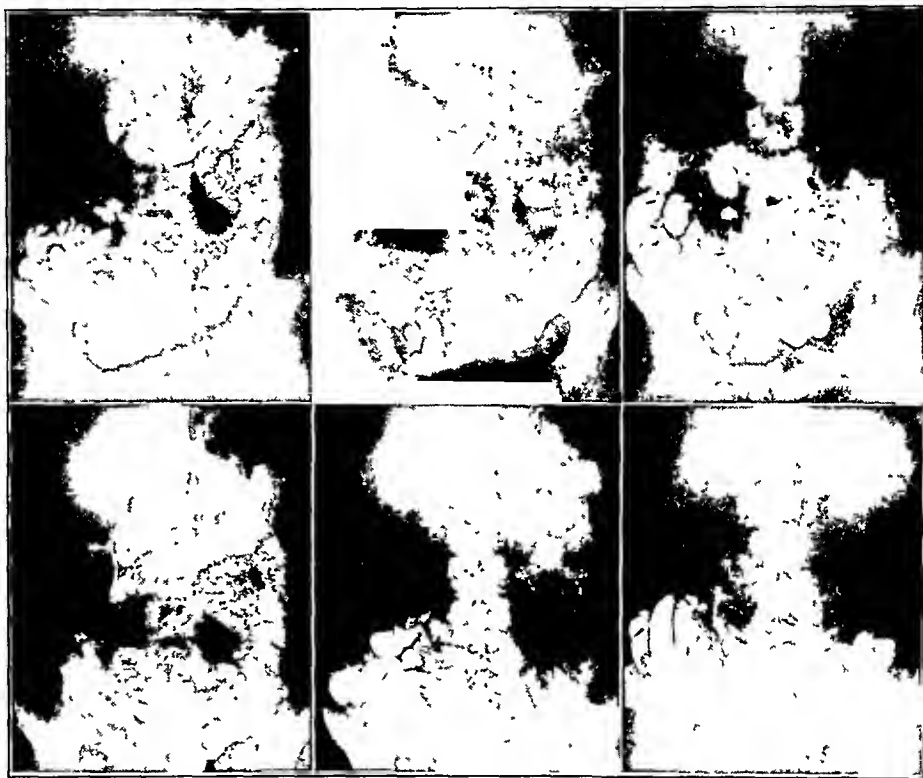


Fig 4 (continuation of figure 3)—Vitamin B complex was discontinued on Jan. 16, 1941. On January 30 she had a sore tongue and tender gums. On February 13 she complained of increased pain and diarrhea, and oral vitamin B complex was resumed with slight improvement in the tongue. Small intestine study on March 3 (third row) showed a definite increase in the segmentation in the middle loops. Liver extract injections were begun on April 1. Two weeks later she felt much better for the first time. Small intestine study on April 28 (fourth row) showed marked improvement in the small intestine pattern.

disturbance in the nervous system supplying the intestinal wall is probably the common factor in these small intestine changes. If this is true, it is obvious that a disturbance in the autonomic nervous system may be either primary, hampering absorption, or may be secondary to a vitamin B deficiency which interferes with nerve function. Unfortunately, the therapy of functional disorders of the autonomic nervous system is unsatisfactory, and this factor can be only partially controlled. Many of the patients in this group had received sedation, psychotherapy and antispasmodic therapy and had become worse under this regimen. The use of whole vitamin B complex, on the other hand, was followed by clinical and objective improvement. The patient who had improved with vitamin B and liver therapy became worse when this was discontinued for ten months and sedation and psychotherapy substituted. She improved again with vitamin B complex therapy. Another patient who exhibited all of the features of the syndrome except

6 Snell, A. M., and Camp, J. D. Chronic Idiopathic Steatorrhea, *Arch. Int. Med.* 53: 615-629 (April) 1934.

7 Golden, Ross. Abnormalities of the Small Intestine in Nutritional Disturbances. Some Observations on Their Physiologic Basis (Carman Lecture), *Radiology* 36: 262-286 (March) 1941.

the abnormal small intestine pattern was given no treatment except a high caloric diet and sedation for six to eight months. At the end of this period an abnormal small intestine pattern appeared for the first time. Even more pertinent was the course of a patient who was first seen in December 1938, when he exhibited the cardinal features of this syndrome. He was called away to a CCC camp in California before adequate therapy could be instituted and remained there for two years, having access to an excellent diet. On reexamination in May 1941, almost two and one-half years after his first visit, marked changes were still present in the small intestine roentgen ray pattern, only slight improvement having occurred.

Despite these facts, it is recognized that it is entirely possible that a primary disturbance in the autonomic

destruction in the alkaline duodenal secretions.⁸ If this protective factor is absent, vitamin B₁ deficiency is facilitated. Whether this holds for other components of the vitamin B complex is not known, but it is possible that it does. This point is of especial importance in evaluating the effects of oral therapy and may explain some of the failures and poor responses. In this connection it should be mentioned that individuals in this group have often used various antacids in ineffectual attempts to control their "indigestion." This medication may also have favored the development of the vitamin B deficiency state.⁹ Several patients, who are not included in this series, had undergone gastroenterostomy for duodenal ulcer and had subsequently developed features of this syndrome. It is possible that, in addition to dietary factors, regurgitation of bile into the stomach

with consequent destruction of vitamin B may have been involved in these cases.

CAPILLARY FRAGILITY

The significance of the increased capillary fragility demonstrated by the tourniquet test is not clear at present. Vitamin C deficiency is apparently responsible in a few cases, but not in the majority. The return to normal of the capillary fragility following vitamin B complex therapy suggests that there may be a factor in the B complex which is concerned with the maintenance of normal capillary fragility. However, the vitamin B complex may merely facilitate the absorption of a dietary factor concerned with capillary fragility. This problem is being studied at present.

STEATORRHEA

Steatorrhea has not been observed in this group of patients. However, this statement is based merely on the results of microscopic examination of the stools.

Chemical studies of fat absorption and excretion are definitely indicated.

RESPONSE TO THERAPY

The present discussion will be limited largely to those cases in which an oral vitamin B complex syrup derived from yeast⁹ was administered. Twelve patients were given this material in doses varying from 1 teaspoon to 1 tablespoon three times daily after meals. The improvement in their clinical condition was striking and at times almost unbelievable. Appetite improved, tiredness disappeared, mental attitudes changed, weight increased, diarrhea, when present, disappeared, and the

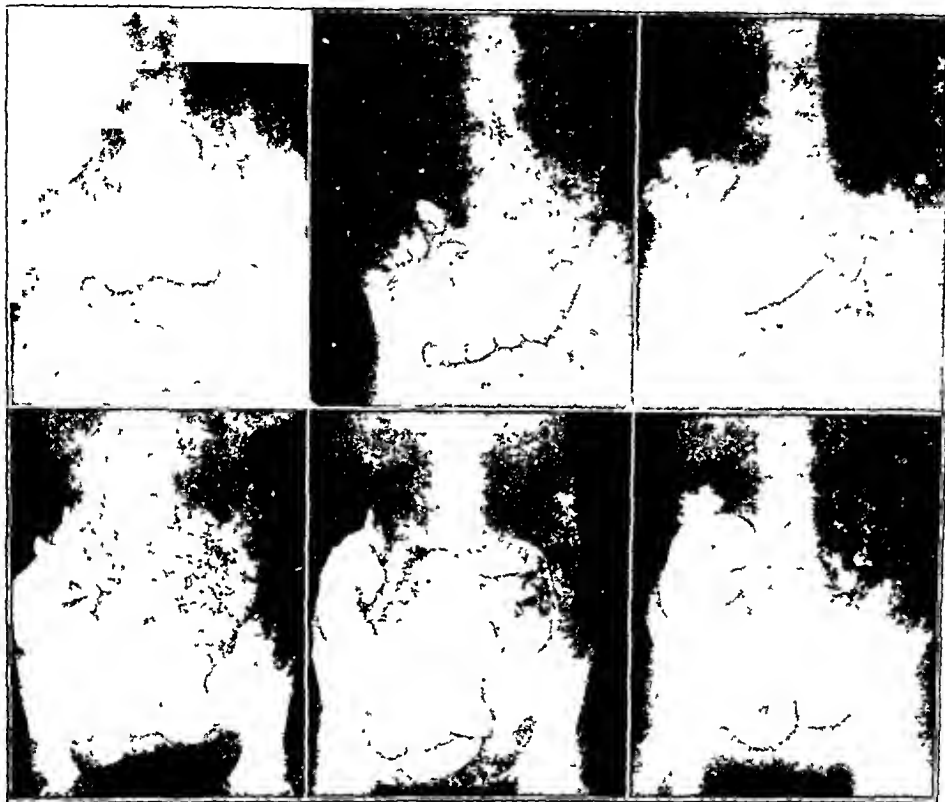


Fig 5—Deficiency state responding poorly to capsules of vitamin B complex but with excellent response to vitamin B complex syrup. A 30 year old woman had abdominal pain for three years, for which the gallbladder and appendix were removed elsewhere without relief. In June 1940 she had intermittent diarrhea with cramping pain. She was thought to have an anxiety state and a spastic colon. Small intestine study on October 24 (upper row) showed only moderate segmentation in the proximal ileum. She was given vitamin B capsules and a high carbohydrate, low residue diet by her local doctor. Small intestine study of March 20, 1941 showed possibly a little less segmentation in the proximal ileum. The sugar tolerance curve on March 21 was flat. Gastric analysis showed a slight hypoaecidity. She was then given vitamin B complex syrup in good doses with striking improvement in her symptoms. Small intestine study on May 7 (lower row) showed only a little segmentation, although some irregularity and coarsening of the mucosal folds and slight segmentation persisted in the middle loops of the intestine.

nervous system control of the small bowel may be of importance in initiating this disorder in some patients. Perhaps this is one of the factors that ultimately determines whether a given patient will develop one or the other of the classic vitamin B deficiency states. Only by following large control groups of such patients can further light be cast on this aspect of the problem.

GASTRIC ACIDITY

Of 13 patients whose gastric juice was analyzed after histamine injection, 3 exhibited achlorhydria, 6 hypochlorhydria and 4 normal acidity. This is a significant finding, for there is evidence indicating that vitamin B₁ is protected by the acidity of the gastric juice from

8 Melnick, Daniel, Robinson, W. D., and Field, Henry, Jr. Fate of Thiamine in the Digestive Secretions. *J. Biol. Chem.* 138: 47-63 (March) 1941.

9. Vitamin B Complex Syrup Abbott.

various abdominal aches improved. The time of appearance of signs of improvement varied considerably. Usually, clinical improvement became evident by the first week or two of therapy, but individuals differed in their response.

Clinical improvement often preceded improvement in the roentgen ray appearance of the small intestine, but in three to four weeks' time improvement in the small intestine was usually demonstrable. Decided improvement was usually evident after two to three months of oral therapy (fig. 2). Where the process was especially severe, after initial improvement, residual changes persisted in the small intestine despite therapy.

It is our impression that patients with achlorhydria have been more resistant to oral therapy than those with normal gastric acidity. In the light of the report of Melnick, Robinson and Field⁸ on the destruction of vitamin B₁ by alkaline duodenal juices, this would seem quite logical. One patient with achlorhydria (fig. 3) responded practically not at all to oral vitamin B complex therapy and in fact actually became worse for a time but responded dramatically to the injection of crude liver extract. In this connection it should be noted that 2 patients had been taking vitamin B complex capsules for three to four months without benefit (fig. 4). When changed to the syrup, rapid clinical improvement ensued. It may well be that patients with this disorder have difficulty in digesting and absorbing encapsulated, highly concentrated preparations of vitamin B complex. The syrup is either better absorbed or richer in certain of the less known factors of the vitamin B complex.

The oral dextrose tolerance curve reverted toward normal in a number of cases. However, when a high carbohydrate diet was consistently adhered to the dextrose tolerance curve remained flat.

As previously stated, this syndrome is not classic sprue, pellagra, beriberi or ariboflavinosis. It is a distinct clinical entity and is of relatively common occurrence in this region. It is important that it be recognized in its early stages before irreversible changes have occurred in the small intestine. The association of a flat oral dextrose tolerance curve and the abnormal small intestine roentgen ray appearance suggests that this disorder is related to sprue. However, in the absence of the other features of classic sprue there is no justification for labeling it as such. It is interesting to speculate as to whether this disorder is the forerunner of sprue, but no conclusive data on this point are available.

If this syndrome is kept in mind when patients presenting these complaints are seen, and the proper studies are made, we are certain that many puzzling and stubborn problems will be solved.

SUMMARY

A nutritional deficiency syndrome of relatively frequent occurrence in this region has been studied. The main objective features of this syndrome are malnutrition, a flat oral dextrose tolerance curve and an abnormal small intestine roentgen ray pattern. The disorder responds to therapy with the whole vitamin B complex. Patients with achlorhydria or severe small intestine changes respond best to parenteral administration of vitamin B complex or crude liver extract.

TUMEFACTIVE LESIONS OF THE SMALL INTESTINE

C. ALLEN GOOD, M.D.

ROCHESTER, MINN.

For many years the results of roentgenologic examination of the small intestine were unsatisfactory. Recent experience, however, leads one to believe that the accuracy of this method is nearly comparable to that which obtains in the roentgenologic examination of the stomach and colon. With the aid of proctoscopy and peroral endoscopy, the entire length of the alimentary canal now may be explored with confidence for the presence of disease.

Although individual tumefactive lesions occur infrequently in the small intestine, in the aggregate they make up a fair proportion of all the pathologic conditions (excluding duodenal ulcer) encountered by the



Fig. 1.—Deformity produced by nonspecific chronic enteritis. The demarcation between involved and uninvolved portions of jejunum is gradual not sharp.

roentgenologist in this division of the gastrointestinal tract. These lesions include both neoplastic and non-neoplastic varieties.

The granulomas or nonneoplastic tumefactions are due in most instances to chronic nonspecific enteritis or to tuberculosis. Granulomas caused by other inflammatory conditions such as actinomycosis, syphilis and lymphogranuloma venereum have been described but they are extremely rare.

The true neoplasms which arise in the small intestine are similar histologically to those which involve the stomach and colon. A variety of benign blastomas have been described including lipoma, fibroma, carcinoid, aberrant pancreatic tissue and angioma, but the most frequently encountered are leiomyoma and adenoma. Most important of the malignant neoplasms is adenocarcinoma; leiomyosarcoma, fibrosarcoma and lymphoblastoma also occur.

From the Section on Roentgenology, Mayo Clinic.

Read before the Section on Radiology, at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 5, 1941.

Weber and Kirklin¹ have shown that the roentgenologic examination of the small intestine has not approached in the past the efficiency reached by similar methods applied to the stomach and colon. They found, however, that 86 per cent of a series of thirty-six neoplasms were located by this means and they expressed the belief that improvement will come with accumulating experience.

The primary function of the roentgenologist when examining the small intestine is to determine the presence or absence of a lesion and to ascertain its location. From the roentgenologic characteristics displayed, he then must attempt to give the lesion a histologic name. Such identification is not always possible, because of the location of the lesion, because of its size or because of accompanying secondary changes which obscure the primary condition.

Two methods for the examination of the small intestine are available, one with only limited usefulness.

of intussusception has been described elsewhere² and will not be discussed here. Identification of the primary lesion is often difficult when obstruction is present. Only when the obstruction is incomplete can sufficient information be gained by roentgenologic methods to allow an opinion as to the nature of the primary lesion. When deformity, or so-called filling defect, occurs alone, it is frequently possible to identify the pathologic process.

Because the small intestine is a tubular organ, the pathologic processes which occur in it resemble morphologically those which involve the colon. It is possible, therefore, to apply the same roentgenologic criteria of diagnosis to the small intestine as have proved so reliable in the large intestine. The deformity, or "filling defect," produced by a tumefactive lesion may be marginal, encircling or central. An analysis of the morphologic features of this deformity often leads to an accurate estimation of the histologic type.



Fig. 2—*a*, "filling defect" caused by adenocarcinoma of duodenum, *b*, obstruction in upper part of jejunum with dilatation of bowel aborally caused by adenocarcinoma, *c*, intussusception located in upper part of jejunum caused by polypoid adenocarcinoma

Examination of the terminal portion of the ileum, the site of the majority of the nonneoplastic tumefactions, may be accomplished at the time of the administration of a barium sulfate enema. Reflux of the opaque solution into the ileum occurs more frequently than not, and the filling of the terminal loops of small intestine in this way permits a satisfactory examination of this portion of the bowel. The remainder of the small intestine is examined best by means of the opaque meal. Frequent roentgenoscopic observations should be made in addition to the customary roentgenograms. This method as it is employed at the Mayo Clinic has been described elsewhere (Weber and Kirklin²).

Tumefactive lesions of the small intestine usually manifest themselves roentgenologically in one or more of three ways: (1) by producing a "filling defect," (2) by obstruction or (3) by intussusception (fig. 2). When intussusception is present, histologic identification of the lesion is almost always impossible, since the roentgenologic signs of intussusception obscure those of the primary condition. The roentgenologic diagnosis

Nonneoplastic tumefactions of the small intestine are due in most instances to tuberculous or to nonspecific enteritis. The gross pathologic features of these two diseases are strikingly similar. Indeed, it is often difficult to distinguish between the two without the aid of a thorough microscopic examination. Roentgenologically they are characterized by involvement of fairly long segments of bowel. The deformity produced is that of constriction of the lumen of the involved segment (fig. 1). Demarcation between involved and uninvolved intestine is gradual. The mucous membrane may or may not be destroyed by ulceration and the mucosal pattern correspondingly changed. The bowel wall is thick and often adherent to neighboring structures.

Occasionally these two conditions may be distinguished one from the other by the experienced roentgenologist. Nonspecific enteritis on the one hand tends to produce a smooth and uniform narrowing of the barium filled bowel, while the contours of the tuberculous intestine on the other hand have a rougher and more furrowed appearance. Additional aid in the

1. Weber, H. M., and Kirklin, B. R.: Roentgenologic Manifestations of Tumors of the Small Intestine, *Am. J. Roentgenol.*, to be published.

2. Weber, H. M., and Kirklin, B. R.: The Roentgenologic Investigation of the Small Intestine, *M. Clin. North America* 22: 1059-1072 (July) 1938.

3. Good, C. A.: Chronic Intussusception of the Small Intestine—Three Cases Diagnosed by Roentgenologic Methods, *Proc. Staff Meet., Mayo Clin.* 16: 324-328 (May 21) 1941.

differentiation rests on the exclusion or recognition of an extra-alimentary focus of tuberculosis. In the presence of such a focus the intestinal lesion is likely to be tuberculous.

In contradistinction to the long deformity produced by an inflammatory process, that caused by a neoplasm is relatively short and sharply demarcated in the long axis of the bowel. This is true whether the neoplasm is benign or malignant.

It must be emphasized, however, that there are no reliable roentgenologic signs of benignancy once the diagnosis of blastoma is established. Many neoplasms show microscopic evidence of malignancy whose gross appearance is that of a benign lesion. A neoplasm which shows no evidence of invasion, which is regular in contour and which has not destroyed the intestinal mucosa may be presumed to be benign. Nevertheless, the roentgenologist in reporting such a lesion must keep in mind the possibility that it may show microscopic evidence of malignancy.

The various benign neoplasms of the small intestine exist chiefly as pedunculated intraluminal growths or as intramural submucous nodules. All may cause intussusception, and when such is the case they exhibit no characteristic features by which they may be distinguished.

Pedunculated intraluminal tumors produce central filling defects in the column of the opaque meal. When small, they are easily overlooked. As they grow larger they tend to cause partial obstruction with dilatation of the bowel orally. There are no characteristics by which the various pathologic forms may be distinguished roentgenologically. Adenoma, leiomyoma, lipoma and fibroma are the most important varieties.

Intramural, submucosal tumors exhibit marginal defects with smooth contours (fig. 3a and 3b). The mucosal pattern of the intestine is flattened but preserved over the tumor except in cases in which ulceration has occurred. The most common tumor in this category is leiomyoma, although aberrant pancreatic tissue, fibroma and lipoma also are found.

Leiomyoma may be suspected when the marginal defect contains a central niche characteristic of ulceration (fig. 3). These neoplasms, which arise from the intrinsic musculature of the bowel wall, are prone to break down, ulcerate and bleed long before the size of the tumor is sufficient to produce symptoms referable in other ways to the alimentary tract.

In the past three years five such lesions have been found by roentgenologists at the Mayo Clinic. In three of these instances a correct histologic diagnosis was suggested at the time the roentgenologic examination was made. Detailed case reports are available elsewhere.⁴

While there are no sure roentgenologic signs of benignancy once the diagnosis of blastoma is established, malignant lesions frequently produce characteristic roentgenologic manifestations (fig. 4). Chief

among the diagnostic signs of malignancy is the obliteration of the mucosal pattern throughout the extent of the lesion. This change in the mucosal relief pattern has a different roentgenologic appearance from that produced by the ulceration of an inflammatory lesion. While the channel through an inflammatory lesion is usually concentric with the lumen of the uninvolved segments of bowel, that through a malignant process is often eccentric. The deformity produced by a malignant tumor is short and sharply limited; it may be marginal or encircling. The demarcation between involved and uninvolved tissue is abrupt. The involved segment is stiffened and, when manipulated, moves as a whole. The relief pattern formed by intestinal mucosa frequently is destroyed entirely; in its place the luminal



Fig. 3—*a*, marginal deformity produced by leiomyoma of jejunum, *b*, portion within rectangle in *a*, reproduced on larger scale, showing marginal deformity; note the niche characteristic of ulceration, *c*, section through leiomyoma of jejunum. The tumor is intramural, lying between the mucosa and the serosa.

aspect of the tumor is marked by rough, jagged contours. There may be partial or complete obstruction, and in rare instances intussusception.

The most common malignant tumor which involves the small intestine is adenocarcinoma. In a series of 92 cases in which a malignant lesion of the small intestine was noted at the time of surgical exploration, C. W. Mayo⁵ found eighty adenocarcinomas and ten leiomyosarcomas. Lymphoblastoma also occurs, but because it responds favorably to radiation therapy it is seldom encountered by the surgeon.

Adenocarcinoma usually produces an annular or polypoid defect in the barium column. Partial obstruction with dilatation of the bowel aborally is common. Fixa-

⁴ Weber, H. M.; Watkins, C. H., and Good, C. A. Unpublished data.

⁵ Mayo, C. W.: Malignancy of the Small Intestine, *West J. Surg.* 45: 403-407 (July) 1940.

tion of the involved segment takes place late in the course of the disease or after perforation. Frequently a mass is palpable which corresponds to the site of the lesion as demonstrated roentgenologically.

The various forms of sarcoma, because they are derived from tissues beneath the mucous membrane, cannot be distinguished from their benign counterparts until such a time as the lesions, because of their size, rapid growth or tendency to infiltrate, exhibit the roentgenologic characteristics of malignancy.

In conclusion, it should be emphasized that the frequency with which lesions of the small intestine are located and identified depends solely on the care taken by the examiner while viewing and manipulating all segments of the bowel during roentgenoscopy. The examination is difficult at best, and greater accuracy in



Fig. 4.—a, adenocarcinoma of duodenum; b, same case, showing annular characteristics and sharp limits of deformity.

diagnosis will come only with greater attention to the detailed scrutiny of every portion of the duodenum, jejunum and ileum.

ABSTRACT OF DISCUSSION

ON PAPERS OF DR. MACKIE, DR. GOLDEN, DR. LEPORE
AND GOLDEN AND DR. GOOD

DR. EUGENE P. PENDERGRASS, Philadelphia: The clinical manifestations that are encountered are bizarre, and if the radiologist will only think of vitamin B deficiency as a condition to be considered if abnormalities are encountered, when studying the small intestine, a correct diagnosis may be made when it is not suspected clinically. The roentgen evidence of B deficiency as emphasized by the authors is variable, depending largely on the time that the B deficiency has been operative, but even in early cases there is delayed gastric emptying. The pattern and motility of the small intestine are disturbed. One patient may show hypermotility and another hypomotility. Many have an initial hypermotility followed by hypomotility. I have studied 3 patients, each of whom was vomiting almost everything he ate. The roentgen findings were such that the roentgen diagnosis of vitamin B deficiency was presented for consideration in each of the 3 patients before the B deficiency was suspected clinically. Appropriate vitamin therapy, with careful medical management, was successful in relieving the symptoms of all 3. In this group, after the water barium meal

(5 ounces of distilled water, 5 ounces of barium sulfate) the pattern of the small intestine appeared coarse, irregular and beadlike. The cecum appearance time of the head of the meal was delayed. There were collections of gas in the small intestine, but the loops were not overdistended. I would like to comment on the normal salt barium meal referred to by Dr. Golden. I used that mixture for a while but have given it up. The meal travels relatively fast through the small intestine, so much so that it was found to be inconvenient to analyze different portions of the intestine unless one increased the number of fluoroscopic observations. I have therefore returned to the use of a meal of 5 ounces of distilled water and 5 ounces of barium sulfate. The small intestinal pattern of vitamin B deficiency should not cause any difficulty in differentiation from that produced in an uncomplicated allergic individual. The radiologist should always suspect allergy in patients with a rapid small intestinal motility. I refer to instances in which the opaque meal (water-barium) will reach the cecum in fifteen to thirty-five minutes. If the allergen is known and a second study is made, at which time the allergen is added to the opaque meal, disturbances of each or all portions of the gastrointestinal tract may occur. Under such conditions the roentgen manifestations may simulate those of a B deficiency.

DR. DAVID ADLERSBERG, New York: Dr. Michael Weingarten and I presented a paper on "The Small Intestine in Nutritional Deficiency" before the joint meeting of this section and the Section on Gastro-Enterology and Proctology two years ago in St. Louis. At that time we stressed that the small intestine apparently requires large amounts of vitamins for its complicated function of digestion and absorption. It may be that because of this fact the small intestine is an excellent carrier of early symptoms of deficiency. We emphasized the fact that in deficiency states the roentgenographic changes of the small intestine are not specific, that similar changes may be found in cases of pancreatic steatorrhea and, as shown years ago by Dr. Pendergrass, after various drugs (morphine, saline laxatives and so on). Nevertheless, and particularly in association with clinical symptoms, these changes are important diagnostically as a lead to a possible nutritional deficiency. We have been using a fat tolerance test for the diagnosis of these cases. The test consists in determination of the total fat in the blood two to six hours after the administration of a standard fat meal. The lack of fat absorption in some cases of nutritional deficiency is striking and persists even longer than the deficient dextrose absorption. I should like to ask Drs. Lepore and Golden whether in their cases, the symptomatology of which is identical with that described by us, steatorrhea was present. There is some evidence that the vitamin B complex may be responsible for changes of the small intestine, but we don't know which individual factor of the B complex it is. We have to include other vitamins since clinical features point to polyavitaminosis. Our recent studies show that vitamin A and the carotene content in the blood of these patients may be very low and it is difficult to raise these low levels, even with large amounts of vitamins. We prefer at the beginning the parenteral route because of the impaired intestinal absorption. We had good results with large amounts of crude liver extract and the known constituents of vitamin B. The addition of lecithin to the diet of these patients had a favorable effect on the intestinal symptoms and the general condition. We had proposed for the intestinal changes associated with or possibly caused by nutritional deficiency the name "chronic enteropathy."

DR. MERRILL C. SOSMAN, Boston: I should like to express my conservatism without implying any criticism at all of the work which has been presented. I should like to emphasize that in any large number of consecutive gastrointestinal examinations one will find about 45 to 50 per cent of patients with some definite demonstrable lesion. That leaves 50 to 55 per cent of patients with no demonstrable lesions. What are we going to do with that 50 to 55 per cent? Almost all of them fit perfectly into this clinical picture, which has been so beautifully presented here. They have discomfort after eating, they have intermittent constipation, and they are relieved by catharsis. There are several places where that 55 per cent, since nothing else can be found, are all designated as "unhappy colons," and they are definitely improved by the so-called bland colonic diet.

I know another place where they are all classified as having insufficient biliary secretion or absorption, and they are much improved by being fed bile salts. Now, shall we, as radiologists, throw ourselves into that fight and classify that 55 per cent as vitamin B deficiencies and help the drug stores? We certainly are very vitamin conscious nowadays, and I put this little gibe in here, hoping that we will not throw the roentgen ray into the position it was in after the World War, when so many diagnoses of "peribronchial tuberculosis" were made because we could not have better films. If we focus a great deal of attention on the small bowel, we are bound to see a lot of abnormalities, but I am sure that those abnormalities will vary from day to day in the same individual, as Dr. Golden has shown, as the result of emotion, worry, fear, changes in diet and allergies, as Dr. Pendergrass mentioned, or of drugs, as Drs. Lepore and Golden mentioned. So I feel that we should be conservative about making any large number of diagnoses of vitamin B deficiency until we have a definite, accurate test of what vitamin B deficiency really is. We do not have that yet, and I do not think that the response to therapy in the human individual can be a very reliable check on the diagnosis. I express this sincerely, with no criticism at all of the material that has been presented.

DR. ROSS GOLDEN, New York: Drs. Mackie and Adlersberg mentioned the fact that no single factor in the vitamin B complex was found to be specifically involved in these disturbances of the small intestine. All the workers have emphasized the fact that the whole vitamin B complex has to be given to make the patients well. It seems that a number of vitamin B fractions are concerned in normal nerve physiology. Therefore it is quite possible that a lack of any one of them, for example thiamine or nicotinic acid—or any of them which take part in the enzyme systems involved in the transfer of oxygen—might conceivably result in this disturbance in physiology of the small intestine. This point illustrates the usefulness of the concept of a neurogenic mechanism which makes it possible to explain various apparently contradictory phenomena. We have no idea how extensively a lack of vitamin B, through its effect on nerve physiology, may disturb intestinal digestion and absorption. Dr. Adlersberg mentioned the relationship between vitamin B and the level of vitamin A in the blood. Mottram, Cramer and Drew in 1922 showed that the absorption of fat from the intestine is abnormal in the absence of the vitamin B complex. Vitamin A is fat soluble and would not be absorbed properly without the B complex. I should like to comment approvingly on Dr. Good's use of the pressure apparatus in studying the small intestine. Abnormal conditions can be shown that way, particularly in the ileum, which cannot be shown in any other way. With regard to the normal saline and the barium suspension, we seem to be able to get satisfactory studies of the entire small intestine with it. Dr. Sosman has warned you not to make too many of these diagnoses. I should like to emphasize that we do not make diagnoses. In past years we failed to note and to appreciate the significance of these intestinal abnormalities which we now demonstrate and call to the attention of the clinician as a nonspecific effect. We call this a "deficiency pattern" of the small intestine because it is seen most frequently in patients who get well following proper treatment with the vitamin B complex. However, it may be due to other things in which a vitamin B deficiency may or may not be concerned directly or indirectly, in particular to liver disease and to disorders associated with hypoproteinemia. Such information, presented as a lead, not as a diagnosis, is often of much help to the clinician. Then, of course, other things should be done which Drs. Lepore and Golden described, for example the dextrose tolerance test and the test for capillary fragility. If we continue to pay no attention to these changes in the small intestine we shall fail to help many patients who can easily be helped.

DR. MICHAEL J. LEPORE, New York: In answer to Dr. Adlersberg's question, steatorrhea was not observed in the patients in this series. Microscopic observations were made but we did not have chemical analyses for stool fat. However, since we know that these patients are on high carbohydrate and low fat diets, it may be that a stool fat examination by microscope would be a little misleading. These cases should be

studied from the point of view of fat metabolism, and plans are being made to do that type of investigation. I think the type of experiment that should be done is to feed these patients measured quantities of fat and see how they handle that fat. So far as the other vitamin deficiencies which occur in association with this syndrome, we have not made any studies of those and we are in no position to make any definite statements. If one remembers that the small bowel is the site of absorption of these other materials, it may be that the vitamin B complex deficiency is primary and that the other defects which are seen are due to poor absorption. As far as parenteral therapy is concerned, in our group of patients, at any rate, most of them responded very well to oral medication. Those patients who had hypochlorhydria or anacidity did poorly, and in those cases we had to resort to parenteral therapy. I think it is well to avoid parenteral therapy in clinical practice if oral therapy can give satisfactory results.

DR. C. ALLEN GOOD, Rochester, Minn.: For many years the examination of the small intestine was relegated to the back door of radiology. Films were taken at intervals but very little attention was paid to them. I should like again to plead for individualization of the examination of the small intestine. It is extremely important to view every segment of duodenum, jejunum and ileum during fluoroscopy. This can be done best not by examining the patient at half hourly or hourly intervals but by timing the frequent roentgenoscopic examinations to the progress of the meal. With some patients this will necessitate fluoroscopic observations every fifteen minutes; with others the interval may be as long as an hour. When looking for small organic lesions it is important to watch a peristaltic wave as it traverses a segment of bowel, since this wave dilates the intestine sufficiently to bring out any small defect which may be present. As Dr. Golden has stated, the radiologist should use pressure devices, "spot" roentgenograms or other special equipment if the use of such equipment assists in obtaining a better examination of the intestine.

Clinical Notes, Suggestions and New Instruments

MASSIVE HEMATURIA FOLLOWING USE OF HEPARIN IN CAVERNOUS SINUS THROMBOSIS

IRVING L. ERSHLER, M.D., and IRL H. BLAISDELL, M.D.,
SYRACUSE, N. Y.

Cavernous sinus thrombosis of the acute fulminating type has always been accompanied by an exceedingly high mortality. In reports of recoveries from this grave disease in the past, the accuracy of the diagnosis has frequently been open to question or criticism. Recently, however, well authenticated reports of recovery following the use of the sulfonamides have begun to filter into the current literature.

In 1940 Schall¹ successfully treated 3 cases of cavernous sinus thrombosis and 1 case of longitudinal sinus thrombosis with a combination of sulfathiazole and heparin. These cases were later reported in part by Lyons.² Morrison and Schindler³ reported 1 case in which a cure was brought about by sulfapyridine alone, while the Wolfes⁴ report still another recovery using sulfathiazole.

The case reported here, in addition to increasing the number of known recoveries, also presents some unique conditions not heretofore encountered. Massive hematuria has not been reported in connection either with cavernous sinus thrombosis or with the use of heparin in any other condition.

From the Student Health Service and the Department of Otolaryngology, Syracuse University.

1. Schall, L. A.: Personal communication to the authors.
2. Lyons, Champ: The Treatment of Staphylococcal Cavernous Sinus Thrombophlebitis with Heparin and Chemotherapy, *Ann. Surg.* **113**: 113 (Jan.) 1941.
3. Morrison, L. F., and Schindler, Meyer: Cavernous Sinus Thrombosis, Report of Recovery Following Sulfapyridine Therapy, *Arch. Otolaryng.* **31**: 948 (June) 1940.
4. Wolfe, C. T., and Wolfe, W. C.: Treatment of Thrombosis of Cavernous Sinus with Recovery, *Arch. Otolaryng.* **33**: 81 (Jan.) 1941.

In 1926 Eagleton⁵ pointed out certain factors essential to the diagnosis of cavernous sinus thrombosis:

1. Known site of infection.
2. Evidence of blood stream infection.
3. Early signs of venous obstruction in the retina, conjunctiva or eyelid.
4. Paresis of the third, fourth and sixth nerves resulting from the pressure of inflammatory edema.
5. Formation of an abscess in the neighboring soft tissues.
6. Evidence of meningeal irritation.

Until the advent of the sulfonamides most cases of this type presented, in addition to Eagleton's postulates, postmortem aspects. In the light of our present knowledge of chemotherapy it has become necessary to recognize the condition before all these postulates have become manifest if successful treatment is to be instituted.

REPORT OF CASE

A college girl aged 22, white, was admitted to the student infirmary Dec. 6, 1940 because of sore throat and fever. This illness was a simple coryza which subsided in forty-eight hours, and she was discharged December 8. The following day headache, a small swelling in the left nasal vestibule and mild inflammation of the left ethmoid and maxillary sinuses developed. In spite of local treatment these symptoms progressed and on the next day, because of fever, increasing headache and pain over the root of the nose and left cheek, she was readmitted to the infirmary.

Physical examination at this time revealed a rectal temperature of 101 F., slight edema of the left lower eyelid and a red indurated area in the left nasal vestibule. The remainder of the physical examination was essentially negative and the diagnosis was furuncle of the left nasal vestibule. In addition to local treatment sulfanilamide was administered, since a culture taken from material from the throat revealed an increase in the number of beta hemolytic streptococci. Twenty-four hours after admission the furuncle in the left nasal vestibule began to drain spontaneously. Culture of this pus yielded *Staphylococcus aureus*, and consequently sulfathiazole was substituted for sulfanilamide. In spite of an apparent general improvement the swelling about the left eye increased and the following day the left angular vein could be palpated as

the lids of the right eye. Definite mental retardation was also present, but neurologic examination yielded no abnormalities. Lumbar puncture was not performed because at no time was there any evidence of meningeal irritation. The patient was transferred to the university hospital that morning, December 13. On admission the lids of both eyes were red and



Fig. 2.—Appearance of patient on third day of disease.

edematous, but muscle excursions were normal in all directions. There was no proptosis and the conjunctivas were normal and showed no edema. The margins of both optic disks were blurred, particularly on the nasal side, and the retinal vessels, both veins and arteries, were definitely dilated. Both retinas were clear and there was no gross contraction of the peripheral visual fields. It was now felt that the diagnosis of cavernous sinus thrombosis was definitely established. Blood cultures taken on admission to the hospital and again four days later remained sterile.

Since one of us (I. H. B.) had recently treated a patient with cavernous sinus thrombosis unsuccessfully with sulfathiazole alone, it was thought that a combination of this drug with heparin as an anticoagulant might yield a better result. The previously noted successes of Schall¹ with this combination seemed to make such a hypothesis even more tenable. Accordingly, heparin therapy was instituted at noon on December 13, the day of admission to the hospital. Sulfathiazole was continued in doses of 1 Gm. every three hours.

Throughout the entire treatment the strength of the heparin solution averaged 4 per cent.⁶ Vehicles used for this were physiologic solution of sodium chloride, 5 per cent dextrose solution and lactated Ringer's solution. These were all given by continuous intravenous infusion, and the amount of heparin administered was controlled by the speed with which the solution was allowed to drip. Every four hours during the nine day period that the infusion was running the blood coagulation time was determined by the 8 mm. tube method of Lee and White.⁷ Prior to starting heparin therapy the blood coagulation time was two and one-half minutes. Four hours after the therapy was started the coagulation time was seven minutes. Thereafter, as can be seen by figure 1, the rise in coagulation time was rapid, so that sixteen hours after the treatment was started the coagulation of the blood was delayed to three hours. An effort was made to maintain a figure of approxi-

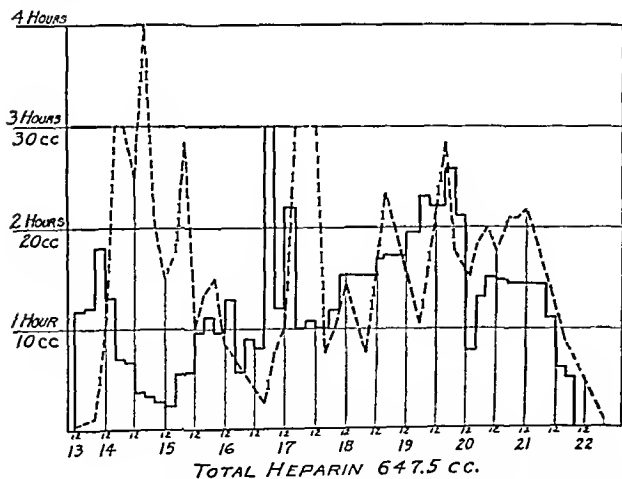


Fig. 1.—Relation of heparin to clotting time. Broken line indicates time in hours; solid column indicates heparin in cubic centimeters for preceding four hour period.

a definite cordlike structure. Ligation of this vein was considered but was deemed inadvisable. Her condition had remained stationary for about twenty-four hours, at which time she suddenly had a shaking chill lasting twenty minutes. Beginning thrombophlebitis of the left cavernous sinus was now suspected. Within the next few hours there developed a definite increase in the swelling of the left eye and some swelling of

5. Eagleton, W. F.: *Cavernous Sinus Thrombophlebitis*, New York, The Macmillan Company, 1926.

6. To make this solution 40 cc. of a solution of heparin, of which each cubic centimeter contained 200 anticoagulant units, was diluted with sufficient vehicle to make 1,000 cc.

7. Lee, R. L., and White, P. D.: A Clinical Study of the Coagulation Time of Blood, *Am. J. M. Sc.* 145:495 (April) 1913.

mately one hundred and twenty minutes. In order to effect this, the speed with which the solution was allowed to run was materially diminished or accelerated, depending on the determination for each previous four hour period. Throughout the nine day period a total of 647.5 cc. of the heparin solution was used.

Sulfathiazole was given continuously (with one interruption of thirty-three hours) throughout the first twenty-seven days of the patient's hospital stay. A total of 106 Gm. was administered. The only toxic effects that could conceivably have been attributed to this drug were one fleeting episode of nausea and a transitory erythematous rash on the trunk and extremities. Both of these episodes cleared within a few hours without any reduction of the dose of sulfathiazole. Levels of total sulfathiazole in the blood varied between 11.7 and 4.7 mg. per hundred cubic centimeters, the average being 8.15 mg. At no time could there be noted any correlation between the sulfathiazole level in the blood and the clinical condition of the patient.

The furuncle in the nasal vestibule continued to drain well for the first twenty-four hours after the heparin was started through openings which had ruptured spontaneously inside the nose as well as externally. Following this, the purulent discharge ceased but, the coagulation time being delayed to approximately three hours, there was a constant bloody ooze from the infected areas of the nose, which persisted until the heparin was stopped.

Within twenty-four hours after the heparin was first administered the swelling about the eyes began to diminish and the induration about the nasal vestibule began to disappear. Likewise, there was a gradual return of the optic disks and blood vessels to normal. The local manifestations continued to improve daily irrespective of the patient's general condition.

Because of obvious difficulties, stereoscopic roentgen examination of the skull was deferred until after the continuous intravenous infusion was stopped. This examination was made on December 24, eleven days after admission. At this time the roentgenograms showed the nasal accessory sinuses to be rela-

During successive days the hematuria continued and increased to such an extent that the urine had almost the appearance of blood obtained by venipuncture from an anemic patient. Large amounts of alkali given both orally and by vein maintained the urinary pH over 8.2. It therefore seemed unlikely



Fig. 4.—Appearance of patient on thirteenth day of disease.

that sulfathiazole calculi could be causing this bleeding. Further, daily microscopic examinations of the urinary sediment failed to reveal the presence of any crystals. There was no evidence of acute nephritis as a cause of the hematuria. The blood pressure remained within normal limits; there was neither nitrogen retention nor peripheral edema, and there were no



Fig. 3.—Appearance of patient on sixth day of disease

tively clear, but there was some hazing of the left petrous ridge. No change was seen in the body of the sphenoid bone. Repeated roentgen examinations on December 31 and January 9 revealed no change from the original examination.

Two days after the infusion of heparin was begun the urine began to appear smoky. Microscopic examination revealed the presence of innumerable erythrocytes in the urinary sediment.

Summary of Blood Counts and Transfusions

Date	Hemo- globin, Gm.	Red Blood Cells	White Blood Cells	Comment
12 13 40	11.0	4,210,000	10,500	Heparin begun
12 15 40	11.5	3,850,000	9,100	Transfusion, 250 cc.
12 16 40	10.5	3,030,000	10,100	Transfusion, 250 cc.
12 17 40	10.5	3,230,000	11,100	Transfusion, 250 cc.
12 18 40	10.0	2,970,000	9,650	Transfusion, 250 cc.
12 19 40	9.5	3,340,000	12,200	Transfusion, 250 cc.
12 20 40	8.0	2,740,000	15,250	Transfusion, 250 cc.
12 21 40	7.5	2,520,000	16,100	Heparin discontinued; transfusion, 250 cc.
12 22 40	8.5	2,570,000	10,900	Transfusion, 500 cc.
12 23 40	10.0	2,880,000	13,150	Transfusion, 500 cc.
12 24 40	12.5	3,750,000	10,500	Transfusion, 500 cc.
12 25 40	14.0	4,550,000	11,800	
12 26 40	13.0	3,000,000	9,400	
12 27 40	14.0	4,210,000	14,150	
12 28 40	15.5	5,200,000	7,600	
12 29 40	15.0	4,970,000	7,300	
1- 2 41	14.0	5,080,000	7,300	
1- 6 41	15.0	5,450,000	13,200	

Total blood by ten transfusions, 3,250 cc.

formed elements in the urinary sediment other than the red blood cells. Because of the progressive anemia (shown in the table) daily transfusions had been started on the same day that the smoky urine was first noted. It seemed unlikely that reactions to this blood could be causing the urinary bleeding. There were no chills and no unusual elevations in the temperature curve. Also the severe alkalinity of the urine along with careful cross matching of blood seemed to preclude this possibility.

Consequently it was felt that the hematuria occurred as a result of oozing and bleeding in the kidneys, and possibly the entire urinary tract, secondary to the artificially produced hemorrhagic diathesis. Owing to the patient's precarious condition

cystoscopy was not performed, but subsequent events seemed to confirm the aforementioned opinion.

On December 21, nine days after admission, the patient's condition seemed desperate. The anemia had progressed dangerously in spite of daily transfusions, and the general clinical picture seemed to have taken a decided turn for the worse. There were several ecchymotic and purpuric areas scattered over the extremities. These were especially well defined in the antecubital fossae and in other areas in which veins had been punctured. Also there was evidence of hemorrhage into both elbow joints, and the urine at this time seemed to be frank blood containing many fair sized clots. Moreover, it was with great trepidation that we were looking forward to the onset of a soon expected menstrual period. Consequently, at 8 p. m., nine days after therapy was started, both sulfathiazole and heparin were discontinued. Thirteen hours later the urine was grossly clear but contained a moderate number of red blood cells on microscopic examination. The patient's general condition seemed much improved, but within a few hours a chill and a decided rise in temperature caused us to resume the administration of sulfathiazole.

Heparin was not given again, and in spite of the continued administration of sulfathiazole the prompt cessation of the urinary bleeding remained permanent. Successive specimens of urine were all clear grossly and within a few days not even microscopic blood could be visualized. The purpura cleared rapidly and the previously immobile elbow joints rapidly resumed normal function. The blood coagulation time promptly returned to normal and three blood transfusions (500 cc. each) brought the hemoglobin content and red blood cell count back to normal in a few days.

Within five days after the readministration of sulfathiazole, the temperature fell by lysis to normal, where it has since remained. The general clinical improvement was striking. Twelve days after sulfathiazole therapy was resumed it was discontinued again. The patient continued well and was discharged from the hospital apparently cured on the thirtieth day after admission.

SUMMARY

Although this case of cavernous sinus thrombosis with recovery does not fulfil all of Eagleton's postulates, we believe that the diagnosis is tenable because of the clinical course of events following a furuncle of the nasal vestibule. Also present were signs of venous obstruction in the retinas and eyelids. Although the blood cultures were sterile, the fact that there were definite shaking chills may be taken as presumptive evidence of blood stream invasion at those times. Since the patient received large doses of sulfathiazole as soon as the furuncle became manifest, prior to the thrombosis of the cavernous sinus, it seems reasonable to suppose that this drug maintained the sterility of the blood cultures. By the same token it prevented the occurrence of meningitis and soft tissue abscesses with inflammatory involvement of the third, fourth and sixth cranial nerves. The hazy appearance of the left petrous ridge on roentgen examination also suggests the presence of infection in this area and tends to support the diagnosis.

A striking feature complicating the treatment in this case was the profound hematuria which persisted in spite of daily blood transfusions. There is evidence to show that this finding was due to the hemorrhagic diathesis artificially produced by the administration of heparin. Almost immediately after the heparin was discontinued the urinary bleeding stopped, the anemia responded to treatment and the clotting time returned to normal.

CONCLUSIONS

1. Theoretically the combination of heparin and sulfathiazole should yield better results in the treatment of cavernous sinus thrombosis than any other measures previously employed. Heparin prevents extension of the thrombus, thus allowing for its lysis. Sulfathiazole not only affords an effective means of combating the original focus of infection but maintains the sterility of the blood stream, thereby preventing meningitis, septic emboli and other sequelae.

2. The intravenous administration of heparin produces a significant prolongation of the coagulation time, which in fact

a hemorrhagic diathesis. Consequently there may be produced dangerous bleeding in vital areas of the body. Our case presented profound renal bleeding from which there were no serious sequelae. Bleeding from cerebral, pulmonary or coronary vessels might conceivably result in disaster.

608 East Genesee Street—713 East Genesee Street.

Special Article

GLANDULAR PHYSIOLOGY AND THERAPY

THERAPY WITH PREPARATIONS OF PANCREAS

RUSSELL M. WILDER, PH.D., M.D.
ROCHESTER, MINN.

This special article is published under the auspices of the Council on Pharmacy and Chemistry. It is one of a series which will be published in book form as the second edition of "Glandular Physiology and Therapy." The opinions expressed in this article are those of the author and do not necessarily represent the views of the Council.—Ed.

Pharmaceutic preparations of internal secretions of the pancreas are limited to insulin, modified insulins and lipocaic. Insulin is a secretory product of the beta cells of the islands of Langerhans; lipocaic may represent a secretion of the alpha cells of these islands. Evidence supporting this assumption has been presented by Dragstedt¹ and by Bensley and Woerner.²

INSULIN

The principal use for insulin is in the control of diabetes. For this purpose it is indispensable. It has found employment also in the treatment of schizophrenia and in the management of malnutrition in certain cases. Claims have been made that the addition of insulin to the dextrose commonly given to patients with disease of the liver and to others following surgical operations is advantageous.

Preparations of Insulin.—Insulin is a protein. Its molecular weight approximates that of egg albumin. It is made available commercially as a buffered solution of insulin hydrochloride in water. For many years this was the only form in which it was dispensed, and therefore at present this preparation is spoken of as "old insulin," "regular insulin" or "unmodified insulin." A more satisfactory term would be "solution of insulin hydrochloride."

Neither the free protein nor the hydrochloride has been crystallized, but salts of insulin with zinc, cadmium or other metals have been prepared in crystalline form (first by Abel), and a solution of zinc insulin crystals was made available commercially early in 1939. It was claimed originally that the action of this preparation was significantly retarded as compared with the action of solution of insulin hydrochloride. These claims, however, have not been substantiated.³ Solution of crystal-

From the Division of Medicine of the Mayo Clinic.
1. Dragstedt, L. R.: The Present Status of Lipocaic, J. A. M. A. 114:29-32 (Jan. 6) 1940.
2. Bensley, S. H., and Woerner, C. A., cited by Woerner, C. A.: The Effects of Continuous Intravenous Injection of Dextrose in Increasing Amounts on the Blood Sugar Level, Pancreatic Islands and Liver of Guinea Pigs, Anat. Rec. 75:91-105 (Sept.) 1939.
3. (a) Ricketts, H. T., and Wilder, R. M.: Solutions of Amorphous Insulin and Solutions of Zinc Insulin Crystals: Clinical Studies on the Comparative Speed and Duration of Action, J. A. M. A. 113:1310-1312 (Sept. 30) 1939. (b) Marble, Alexander, and Vartiainen, Ilmari: Crystalline Insulin, ibid. 113:1303-1309 (Sept. 30) 1939. (c) Jackson, R. L., and Boyd, J. D.: Relative Efficiency of Commercial Forms of Insulin, Proc. Soc. Exper. Biol. & Med. 41:15-16 (May) 1939.

line zinc insulin represents an insulin of high purity, and that it should give rise to fewer dermal allergic reactions is probable.^{3b}

Retard Insulin: A number of means have been employed in attempts to retard the speed of action of insulin and thereby to prolong the duration of activity of a given dose. The only one of the "retard preparations" available commercially in America is protamine zinc insulin. This substance is insoluble at the p_H of the tissue, and thus absorption from the site of injection proceeds slowly. The amount of zinc contained is 1 mg. per 500 units of insulin, which is harmless. Hagedorn,⁴ of Copenhagen, introduced protamine insulin in 1937. Protamines are basic polypeptides. They have been obtained from the sperm of trout, mackerel and salmon. Scott and Fisher,⁵ of Toronto, added zinc, after noting that protamine had little effect on the rate of absorption of purified amorphous insulin. The original Danish preparation presumably contained metallic impurities.

Strength of Preparations of Insulin.—The strength of insulin is expressed in units. A unit as now defined is a twenty-second part of a milligram of a preparation of zinc insulin crystals in the possession of the National Institute for Medical Research, London, England. All forms of commercial insulin are dispensed in 5 or 10 cc. rubber-capped vials in various concentrations designated "U-20," "U-40," "U-80" and so forth, to indicate the number of units contained in 1 cc.

Administration of Insulin.—Insulin is inactivated by the gastric enzymes and is not absorbed by the rectum or colon. Parenteral administration is therefore obligatory. Soluble preparations of insulin, but not protamine zinc insulin, may be given by vein. Resort to intravenous injection, however, is limited to emergencies; the usual method of administration is by subcutaneous injection.

None of the so-called antidiabetic pancreatic preparations reputed to be effective when taken by mouth have withstood rigid clinical testing. Claims that any such preparations exert a rejuvenating or stimulating action on the diseased pancreas have not been established.

Control of Diabetes with Insulin.—The theory which underlies the administration of insulin in diabetes mellitus is that of substitution therapy. Insulin is injected to provide for utilization of the dextrose which enters the circulation from the liver or is absorbed from the intestines; the dosage depends on the degree of pancreatic efficiency, on the intensity of activity of hormonal and nervous mechanisms opposed to the action of insulin and on the character of the diet. In the milder form of diabetes glycosuria usually can be controlled by limiting the intake of carbohydrate. In such cases insulin is not indicated. When the degree of insular (pancreatic) insufficiency is greater or when abnormal contrainsular activity, such as is encountered with hyperthyroidism, infection and other complications, is present, insulin must be used. It is unwise to sacrifice the nutrition of a patient simply to avoid the necessity of giving insulin.

It rarely is possible to obtain satisfactory control of severe diabetes with protamine zinc insulin alone. When the total dose of insulin required exceeds 20 or 30 units, injections of supplementary unmodified insulin are desirable in most cases to prevent gross glycosuria

after meals. The ideal use of insulin would be to imitate the action of the normal pancreas. This, as Lawrence and Archer⁶ suggested, probably involves (1) a continuous secretion of small amounts of insulin and (2) an increase in the secretion of insulin after meals to deal with ingested carbohydrate. No one type of insulin therapy can imitate both aspects satisfactorily. Protamine zinc insulin provides well for the small continuous supply required during the night, but if given in doses large enough also to control the glycosuria which follows meals, it provokes hypoglycemia in the night. Unmodified insulin acts quickly and is best adapted to meet the requirement for more insulin activity at meal times. These considerations led Lawrence and Archer⁶ and Graham⁷ to attempt the simultaneous injection from one syringe of both protamine zinc insulin and unmodified insulin. In the mixture some of the soluble insulin may be bound by the excess of protamine present in the protamine zinc insulin, but even so irregularities of action from day to day are little more conspicuous than when the two insulins are injected into separate sites. This also has been the experience of Warvel and Shafer⁸ and of Himsworth.⁹ The latter stated:

It is only in mild cases that the new preparations may legitimately be expected to control the disease during the whole twenty-four hours. . . . In cases of any severity their action should be reinforced by the administration of ordinary insulin at those times when a sudden influx of sugar from the intestine is found to overwhelm their mild action. An analogy may be drawn between the use of the new insulin and a modern technique in anaesthesia. The protamine insulins are comparable to the basal anaesthetics whose effect is both mild and prolonged; ordinary insulin is comparable to the volatile anaesthetic which is superimposed at times when a stronger control is required.

I have adopted the technic of mixing unmodified and protamine zinc insulin in one syringe, with satisfactory results.¹⁰ In most cases adequate control both of post-absorptive and postprandial glycosuria can be obtained by this means with only one injection a day, the injection being made before breakfast. It is important to draw the dose of unmodified insulin into the syringe first, to avoid introducing any alkaline protamine zinc insulin into the bottle of unmodified insulin. The patient is taught to adjust the components of the mixture of insulins so that the urine passed before breakfast and before the evening meal will contain small traces of sugar. This degree of glycosuria is compatible with freedom from ketosis, stability of the nitrogen balance, normal growth of children and maintenance of normal body and mental vigor, whereas by avoiding more rigid control of glycosuria the danger from insulin reactions is minimized.

Insulin Reactions.—The hypoglycemia which results from overdoses of insulin entails more serious danger of provoking injury than is commonly appreciated. If an insulin reaction can be combated early, serious consequences almost always are avoided, but otherwise lasting danger may be done to the central nervous system. The lesions observed in the brain in fatal cases consist of hemorrhages, perivascular infiltration of round cells, atrophy of the cortex and swelling of the glia and axis-

4. Hagedorn, H. C.: Fortschritte in der Insulin-Therapie, Schweiz. med. Wchnschr. 68: 37-41 (Jan. 8) 1938.

5. Scott, D. A., and Fisher, A. M.: Studies on Insulin with Protamine, J. Pharmacol. & Exper. Therap. 58: 78-92 (Sept.) 1936.

6. Lawrence, R. D., and Archer, Nora. Zinc Protamine Insulin: A Clinical Trial of the New Preparation, Brit. M. J. 1: 487-491 (March 6) 1937.

7. Graham, George. The Use of a Mixture of Ordinary and Protamine Insulin, Acta med. Scandinav. 1938, supp. 90, pp. 54-63.

8. Warvel, J. H., and Shafer, M. R.: Protamine Insulin in the Treatment of Diabetes Mellitus, J. Indiana State M. A. 30: 325-332 (July) 1937.

9. Himsworth, H. P.: Protamine Insulin and Zinc Protamine Insulin in the Treatment of Diabetes Mellitus, Brit. M. J. 1: 541-546 (March 13) 1937.

10. Wilder, R. M.: Clinical Diabetes Mellitus and Hyperinsulinism, Philadelphia, W. B. Saunders Company, 1940, pp. 91-95.

cylinders.¹¹ The danger is greater when protamine zinc insulin is used. This probably is explained by the fact that the blood sugar after administration of protamine zinc insulin is lowered so gradually that early symptoms of insulin reaction may be unobserved. Much chronic debility is now encountered among patients who are misusing protamine zinc insulin. It is characterized usually by headaches and asthenia, but in some cases sensory and motor neuritis are observed, and in others severe psychopathic conditions. Permanent idiocy has been recorded as a sequel of induced hypoglycemia by two groups of observers,¹² and the number of fatalities attributable to overdosage of insulin and to induction of insulin collapse (shock) for the treatment of schizophrenia is not inconsiderable. This accumulated experience has led me to the opinion that the control of diabetes with insulin should be less rigid than heretofore has been demanded.

Treatment of Schizophrenia with Insulin.—The resort to insulin collapse (shock) in the treatment of schizophrenia was introduced by Sakel.¹³ The insulin shock has been employed extensively in psychopathic hospitals. It is a dangerous procedure with a relatively high mortality and should be undertaken only by physicians who are thoroughly familiar with the method. Other convulsants unrelated to insulin also bring about an improved condition in patients with mental disorders.

Insulin Treatment for Addiction to Morphine.—Insulin therapy for symptoms of morphine withdrawal, as proposed by Sakel,¹⁴ has not met with critical approval.¹⁵

Insulin Treatment for Anorexia.—Insulin is much used to induce appetite and hunger and thereby to increase consumption of food. The results reported are variable. The greatest effectiveness is observed when the use of insulin is combined with strong suggestion. Heinz and Palmer¹⁶ could demonstrate no consistent effect on the contractions of the empty stomach or the hunger pangs.

Insulin Combined with Dextrose for Nondiabetic Abnormalities.—After an operation the patient may exhibit diminished ability to utilize dextrose from several causes, none of which involves any permanent derangement of the endocrine function of the pancreas. Among such causes are starvation, anesthesia and surgical trauma. The use of insulin in the treatment of the glycosuria and occasional acidosis which may follow operations on nondiabetic patients was frequently recommended after the discovery of insulin, but more recently it has been largely abandoned. Experimental evidence for increased rates of utilization of dextrose by normal subjects given insulin is not striking, and the temporary depression of tolerance for dextrose as well as the accompanying ketosis which results from fasting can be overcome rapidly by administration of dextrose alone.¹⁷

11. Malamud, N., and Grosh, L. C., Jr.: Hyperinsulinism and Cerebral Changes: Report of a Case Due to an Islet Cell Adenoma of the Pancreas, *Arch. Int. Med.* 61: 579-599 (April) 1938. Moersch, F. P., and Kernohan, J. W.: Hypoglycemia: Neurologic and Neuropathologic Studies, *Arch. Neurol. & Psychiat.* 39: 242-257 (Feb.) 1938.

12. Klein, F., and Ligierink, J. A.: Insulin and Cerebral Damage, *Arch. Int. Med.* 65: 1065-1096 (June) 1940. Layne, J. A., and Baker, A. B.: Hypoglycemic Cerebral Damage in Diabetic Patients, *Minnesota Med.* 22: 771-776 (Nov.) 1939.

13. Sakel, Manfred: Zur Methodik der Hypoglykämiebehandlung von Psychosen, *Wien. klin. Wchnschr.* 56: 1278-1282 (Oct. 16) 1936.

14. Sakel, Manfred: Neue Behandlung der Morphinsucht, *Deutsche med. Wchnschr.* 56: 1777-1778 (Oct. 17) 1930.

15. Osenfort, W. F.: Drug Addictions, in Barr, D. P.: *Modern Medical Therapy in General Practice*, Baltimore, Williams & Wilkins Company, 1940, vol. 1, p. 1160.

16. Palmer, W. L.: Diseases of the Digestive System, in Barr, D. P.: *Modern Medical Therapy in General Practice*, Baltimore, Williams & Wilkins Company, 1940, vol. 2, p. 2236.

17. Sprague, R. G.: Dextrose and Insulin in Nondiabetic Cases, editorial, *Minnesota Med.* 22: 649-650 (Sept.) 1939.

LIPOCAIC

The name "lipocaic" was given by Dragstedt, Van Prohaska and Harms¹⁸ to an extract of beef pancreas which prevented the fatty infiltration and degeneration that commonly develop in the livers of depancreatized dogs when such dogs are maintained alive with insulin and do not receive fresh pancreas, lecithin or choline. The existence of a condition exactly similar to this has not frequently been recognized in diabetes of human beings. There have been, however, two reports of cases¹⁹ in which hepatomegaly did not respond to insulin or diet but receded after administration of lipocaic. Also of interest from the clinical standpoint is the observation of Dragstedt and his associates²⁰ of arteriosclerosis in 6 depancreatized dogs in which for a period of from six to nine months the diabetes was well controlled with insulin, while fatty liver was intermittently permitted to develop by intermittently withholding treatment with lipocaic. Spontaneous arteriosclerosis of the degree observed is exceedingly rare in the domestic dog, so that the observation seems to be significant. It may have a bearing on the question of frequent occurrence of arteriosclerosis among diabetic patients.

Commercial preparations of lipocaic are not as yet available, largely owing to the fact that a satisfactory economical method of assay has not been developed.

Council on Physical Therapy

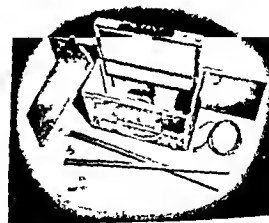
THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS
HOWARD A. CARTER, Secretary.

ILGAIRATOR WITH DUST-STOP FILTER ACCEPTABLE

Manufacturer: ILG Electric Ventilating Company, 2850 North Crawford Avenue, Chicago.

The Dust-Stop Filter, manufactured by the Owens-Corning Fiberglass Corporation, Toledo, Ohio, installed in an Ilgairator unit AF-t, is intended to be placed in a window frame for filtering the pollen from the air passing through the filter. The filter proper consists of a mass of closely packed, spun glass, soaked in tricresyl phosphate, in a cardboard frame and measures 11¾ by 17¾ by 2 inches.

The Ilgairator unit is contained in a metal cabinet with side panels which may be extended to fit an ordinary window frame. When mounted in the window, the cabinet extends over the sill into the room. Intake louvers are located on the back, or that portion of the cabinet outside the window; outlet louvers at the front of the cabinet may be directed at any angle. A three bladed motor, so mounted as to eliminate as much vibration as possible, draws the air through the filter which is fixed against the intake louvers. A variable speed control regulates the air intake.



Ilgairator with Dust Stop Filter.

18. Dragstedt, L. R.; Van Prohaska, John, and Harms, H. P.: Observations on a Substance in Pancreas (a Fat Metabolizing Hormone) Which Permits Survival and Prevents Liver Changes in Depancreatized Dogs, *Am. J. Physiol.* 117: 175-181 (Sept.) 1936.

19. Grayzel, H. G., and Radwin, L. S.: Hepatomegaly in Juvenile Diabetes Mellitus Treated with Pancreatic Extract, *Am. J. Dis. Child.* 56: 22-32 (July) 1938. Rosenberg, D. H.: Proved Case of Recovery from Fatty Metamorphosis of the Liver After Treatment with Lipocaic, *Am. J. Digest. Dis.* 5: 607-615 (Nov.) 1934.

20. Dragstedt, L. R.; Goodpasture, W. C.; Verneulen, C., and Clark, D. E.: Arteriosclerosis in Depancreatized Dogs, *Am. J. Physiol.* 126: P479-P480 (July) 1939.

Detailed reports of examinations conducted by the research laboratories of the firm were submitted and described the efficiency of the filter in removing pollen from the air. The first of these reports incorporates the results found when the filter was tested in a modification of the Rowley filter testing apparatus, in which a plenum chamber was used for obtaining an even distribution of pollen during the test. A summary of the results found by use of this apparatus disclosed that the Dust-Stop No. 2 Filter had an average efficiency of 98 per cent when tested at velocities of 300, 400 and 500 feet per minute.

The second series of examinations conducted by the research laboratories of the firm showed that the average overall efficiency of the 2 inch filter after two hundred and sixteen hours of testing was 97.6 per cent.

In the Council's examination of the unit it was mounted in a window frame in a specially constructed chamber with the intake louvers placed inside the chamber. This chamber is so constructed that pollen, dusts and other inhalants may be freely circulated in the air before the unit is started and the air is sucked through the unit to be tested. Greased slides were placed before the outlet louvers.

Pollen was then freely circulated for several minutes in the chamber by means of a fan. The unit was started and run for varying periods of time. Very few pollen particles were observed in these tests.

Dust was then admitted to the chamber and fresh slides were exposed. These slides showed many particles ranging in size up to 15 microns. These tests were made with fresh filters in the unit.

From the tests performed the Council concludes that the Dust-Stop Filter when used in the ILG unit AF-t is efficient for the removal of ragweed pollen from the air.

The Council voted to accept the Ilgairator unit AF-t, with the Dust-Stop Filter, for inclusion on its list of accepted devices.

SANBORN WATERLESS METABOLISM TESTER, 1941 MODEL, ACCEPTABLE

Manufacturer: Sanborn Company, 39 Osborn Street, Cambridge, Mass.

The Sanborn Waterless Metabolism Tester, 1941 Model, has essentially the same features as the Council accepted Sanborn Waterless Metabolism Tester,¹ differing slightly in the arrangement of some of its auxiliary parts. It is a compact, semi-portable unit operating on 110-120, 60 cycle alternating current, and it may be readily wheeled from room to room. The unit proper is 18 inches high by 15 inches long by 10 inches wide, and when mounted on an optional stand its total height is 46 inches. The oxygen tank is carried in an upright position on the stand. Connecting the apparatus with the patient are tubes 27 inches long.

Examination of the apparatus by the Council disclosed the following results:

The recording device, whose accuracy depends on the current inflow, consists of a compact electrically driven kymograph $3\frac{3}{8}$ inches in diameter carrying a special wax coated chart held rigidly in place by special clamps. The kymograph makes one complete revolution in ten minutes. The rulings on the chart are sufficiently accurate.

The oxygen in the rubber bellows is circulated by means of a motor driven fan which develops a positive pressure of 1.81 mm. water pressure on the mouthpiece. The motor is quiet. It heats according to the thermometer in the circulating chamber to the extent of 2.5 degrees in ten minutes and 7 degrees in twenty minutes. Circulation of the oxygen past the mouthpiece makes the breathing easy for the patient. A valve inserted in the air line makes it possible for the operator to connect the patient with room air or oxygen of the apparatus at will. The air inlet is large enough to accommodate regular breathing.

In the measurement of oxygen consumed, this metabolism tester is adapted to use two different methods: (1) the measurement of time necessary for the patient to consume a definite amount of oxygen, and (2) the measurement of the amount of oxygen consumed in a definite amount of time.

In the first, or short test, method a definite amount of oxygen, 1.25 liters, is put in the bellows and the patient breathes from this until that amount of oxygen is consumed. The time for this consumption is noted and the computation is made on that basis. Sufficient excess oxygen remains in the bellows at all times to insure the patient's comfort.

In the second, or long test, method the bellows is filled with a sufficient amount of oxygen for the patient to breathe for a definite length of time, which may be from six to ten minutes. The amount of oxygen is then computed from the fall of the bellows. This fall is calibrated in terms of volume of oxygen.

Computation of the patient's basal metabolism rate in both test methods may be made by means of a special slide rule furnished with the machine. This rule can be used only after the cubic centimeters of oxygen per minute have been determined. In the short test, measurements in cubic centimeters per minute may be read directly by means of a special scale found at the top of each sheet of the kymograph paper. This scale is logarithmic and calibrated to indicate cubic centimeters of oxygen per minute actually consumed by the patient.

In the long test, a special T type scale is furnished, from which the cubic centimeters per minute of actual oxygen consumption may also be read directly. It is calibrated in the same manner as the edge of the chart but is adjustable for corrections in temperature and barometric pressure as they exist when the test is being run.

The accuracy of both the short and the long test depends on the accuracy of the calibrations of the T scale and of the scale on the edge of the chart. These scales were examined and found to be sufficiently accurate. It might also be noted here that owing to the instability of the T type scale slight variations in readings can be made by different manners of holding the scale on the chart. These amount to only ± 1 per cent in the final result and may be considered sufficiently accurate.

The accuracy of the short test method depends on the accuracy with which oxygen is delivered to the bellows. This oxygen is measured in the apparatus by means of a small compression chamber connected with a gage and designed to measure exactly 1,250 cc. of oxygen at 760 mm. pressure and at 0 centigrade. A red hand on this gage varies with the change in pressure made by the temperature changes. By filling the gage to the mark of the movable hand, variations in temperature and pressure are supposed to be accounted for.

To test the accuracy of the chamber and the gage, a spirometer method was used. The amount of oxygen taken from the point at which it entered the bellows was measured. An average of four trials showed a total volume of 1,368.84 cc., which when corrected for standard conditions of temperature, pressure and moisture gave a total of 1,249.15 cc. of oxygen as the contents of the chamber. This is well within the limits of accuracy.

The ability of the system to hold gas was tested both with the patient valve shut and with the patient valve open but with the mouthpiece stoppered. Two tests of twenty-four hours each in a constant temperature showed no leakage of the machine either through the valve or through the tubes. Four tests of twenty-four hours each in a constant temperature and employing 950 Gm. of weight suspended on the bellows also showed no leakage either through the valve alone or through the tubing and other connections.

The Council voted to accept the Sanborn Waterless Metabolism Tester, 1941 Model, for inclusion in its list of accepted devices.



Sanborn
Waterless
Metabolism
Tester,
1941 Model

1. J. A. M. A. 112:2133 (May 27) 1939.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

THEODORE G. KLUMPP, M.D., Secretary.

HUMAN BLOOD PLASMA AND SERUM

Investigations of the biologic properties of blood serum and plasma commenced with the work of Bowditch¹ in 1871 in the laboratory of Carl Ludwig. In the many studies made since that time little distinction has been made between blood serum and blood plasma. In 1910 Moldovan² pointed out that strictly fresh blood serum is often very toxic and may produce intravascular clotting. This action is temporary and disappears in thirty minutes because of destruction of a fibrin ferment. This is followed by the appearance of vasopressor and depressor substances. It was shown by Stevens and Lee³ in 1884 that the vasopressor substances appear in serum but not in plasma. This work was confirmed by Brodie⁴ and O'Connor.⁵ The vasopressor substance is not epinephrine, and since it is relatively resistant to destruction by heat (Schlayer,⁶ Stewart and Harvey⁷ and others) it is probably not a protein. It has been suggested that the pressor action is due to particulate matter in the serum (Eichholtz and Verney⁸). However, the fact that ergotoxin prevents the pressor effect (Heymans, Bouckaert and Moraes⁹) suggests that some other explanation is necessary for the pressor action. More serious from the point of view of transfusion is the presence of vasodepressor substances in both plasma and serum. Stewart and Harvey⁷ studied one of these vasodepressor substances and found it to be a protein of the albumin type which seemed to act on the blood vessels, particularly of the kidney. Freund¹⁰ suggested that one of the vasodepressor substances might be derived from the blood platelets. This substance was found by Zipf¹¹ and by Fiske¹² to be adenosine phosphoric acid.

While these vasotonins may disappear in part from the serum and plasma in twenty-four hours (Freund¹⁰), frequently they persist indefinitely (Bayliss and Ogden¹³). It is apparent from this discussion that vasotonins are more likely to be present in blood serum than in blood plasma.

EXPERIMENTAL SERUM AND PLASMA TRANSFUSIONS

Little distinction was made by the earlier workers between plasma and serum in experimental transfusion. The earliest transfusions with serum were made by Guthrie and Pike¹⁴ in 1907 in experimental hemorrhage with good results. This was confirmed by Mann,¹⁵ by Rossius¹⁶ and by Kallius,¹⁷ who also used blood serum for the replacement of whole blood after hemorrhage.

The first studies comparing the advantages and disadvantages of plasma and serum were those of Richet, Brodin and Saint-Girons.¹⁸ These workers found that plasma was superior to

serum in the treatment of experimental hemorrhage. Buttle and his co-workers¹⁹ investigated the relative efficacy of whole blood, plasma and serum in hemorrhagic shock in animals. Whole blood was found to be most efficacious. Plasma transfusions in their experiments were superior to serum transfusions, since reactions were more frequent with serum and the rise of blood pressure was not as well maintained. Similarly Mahoney²⁰ obtained good results with plasma in the treatment of hemorrhagic and traumatic shock. On the other hand, serum has been found more effective in hemorrhage in animals (Levinson, Neuwelt and Necheles²¹), while other workers (Magladery, Solandt and Best,²² Best and Solandt²³) obtained equally good results with plasma and serum in experimental hemorrhage. Best and Solandt²³ believe that the transfusions should be administered very rapidly (50 to 100 cc. per minute) to be most effective.

Plasma and serum have been used to replace the proteins of the blood in hypoproteinemic conditions. Weech, Goettsch and Reeves²⁴ obtained satisfactory results with serum transfusions in animals suffering from edema and hypoproteinemia as a result of low protein diets. Subsequent investigators have utilized both plasma and serum in hypoproteinemia induced in lower animals by plasmapheresis.

CLINICAL PLASMA AND SERUM TRANSFUSIONS

In 1932 Kunz²⁵ transfused blood serum to patients suffering from acute blood loss and stated his belief that the results equaled those following whole blood transfusions. Filatov and Kartasevskij²⁶ administered by vein plasma obtained from group AB blood to patients suffering from continued bleeding. They found that such transfusions exerted a hemostatic effect. They also reported satisfactory results in patients suffering from acute loss of blood, from burns and from traumatic shock who were treated with plasma transfusions. They pointed out that the plasma could be conserved in a refrigerator for periods of ten to three hundred and thirty days before transfusions. Mild reactions (rigor and elevation of temperature) occurred in twenty-nine transfusions and severe reactions in five transfusions. While this is the earliest complete report on the use of plasma transfusion, it must be pointed out that others had reported its use previously (Payne and Steen,²⁷ Feissly,²⁸ Mairano and Teneff²⁹).

Burceva³⁰ in 143 plasma transfusions, utilizing plasma conserved for periods of ten to one hundred and sixty-five days, noted reactions in 34 per cent of the patients. Heinatz and Sokolow³¹ utilized plasma transfusion in patients suffering from hemolytic shock following blood transfusion.

In 1937 Alovski and Burceva³² transfused plasma into 90 patients suffering from hemorrhage due to various gynecologic lesions. They noted post-transfusion reactions in 67.6 per cent of these patients. All of these workers used serum or plasma from universal donor blood or carried out preliminary cross matching tests with the blood of the prospective recipients.

Recently Tatum, Elliott and Nessett³³ suggested that blood plasma or serum could be transfused without preliminary typ-

1. Bowditch, H. P.: *Arb. a. d. physiol. Anst. zu Leipzig* **6**: 139, 1871.

2. Moldovan, J.: *Deutsche med. Wchnschr.* **36**: 2422, 1910.

3. Stevens, L. T., and Lee, F. S.: *Johns Hopkins Univ., Stud. Biol. Lab.* **3**: 99, 1884.

4. Brodie, T. G.: *J. Physiol.* **29**: 266, 1903.

5. O'Connor, J. M.: *Arch. f. exper. Path. u. Pharmacol.* **67**: 195, 1912.

6. Schlayer, H.: *Deutsche med. Wchnschr.* **33**: 187, 1907.

7. Stewart, H. A., and Harvey, S. C.: *J. Exper. Med.* **16**: 103, 1912.

8. Eichholtz, F., and Verney, E. B.: *J. Physiol.* **59**: 340, 1924.

9. Heymans, C.; Bouckaert, J. J., and Moraes, A.: *Arch. internat. de pharmacodyn. et de therap.* **43**: 468, 1932.

10. Freund, H.: *Arch. f. exper. Path. u. Pharmacol.* **86**: 266, 1920.

11. Zipf, K.: *Arch. f. exper. Path. u. Pharmacol.* **160**: 579, 1931; **167**: 621, 1932.

12. Fiske, C. H.: *Proc. Nat. Acad. Sc.* **20**: 25, 1934.

13. Bayliss, L. E., and Ogden, E.: *J. Physiol.* **77**: 34 P, 1933.

14. Guthrie, C. C., and Pike, F. H.: *Am. J. Physiol.* **18**: 14, 1907.

15. Mann, F. C.: *Further Experimental Study of Surgical Shock*, J. A. M. A. **71**: 1184 (Oct. 12) 1918.

16. Rossius, L.: *Arch. f. klin. Chir.* **137**: 583, 1925.

17. Kallius, H. V.: *Deutsche Ztschr. f. Chir.* **220**: 216, 1929.

18. Richet, C.; Brodin, P., and Saint-Girons, F.: *Compt. rend. Acad. d. sc.* **167**: 618, 1917; Richet, C., *ibid.* **169**: 1072, 1919.

19. Buttle, G. A. H.; Kekwick, A., and Schweitzer, A.: *Lancet* **2**: 507, 1940.

20. Mahoney, E. B.: *Ann. Surg.* **108**: 178, 1938.

21. Levinson, S. O.; Neuwelt, Frank, and Necheles, Heinrich: *Human Serum as Blood Substitute in Treatment of Hemorrhage and Shock*, J. A. M. A. **114**: 455 (Feb. 10) 1940.

22. Magladery, J. W.; Solandt, D. Y., and Best, C. H.: *Brit. M. J.* **2**: 248, 1940.

23. Best, C. H., and Solandt, D. Y.: *Brit. M. J.* **2**: 116, 1940.

24. Weech, A. A.; Goettsch, E., and Reeves, E. B.: *J. Clin. Investigation* **12**: 217, 1933.

25. Kunz, H.: *Zentralbl. f. Chir.* **59**: 1003, 1932.

26. Filatov, A., and Kartasevskij, N.: *Zentralbl. f. Chir.* **62**: 441, 1935.

27. Payne, W. W., and Steen, R. E.: *Brit. M. J.* **1**: 29, 1929.

28. Feissly, D.: *Zentralbl. f. Kinderh.* **60**: 297, 1927.

29. Mairano, M., and Teneff, S.: *Boll. e mem. Soc. piemontese di chir.* **2**: 1280, 1932.

30. Burceva, E.: *Arch. f. klin. Chir.* **182**: 710, 1935.

31. Heinatz, S. W., and Sokolow, N. I.: *Zentralbl. f. Chir.* **62**: 1733, 1935.

32. Alovski, A., and Burceva, E.: *Monatschr. f. Geburtsh. u. Gynäk.* **105**: 38, 1937.

33. Tatum, W. L.; Elliott, J., and Nessett, N.: *Mil. Surgeon* **55**: 481, 1939.

ing Strumia, Wagner and Monaghan³⁴ in 1940 reported a series of plasma transfusions in which the plasma was not previously cross matched with the recipient's blood. They noted no post-transfusion reactions. According to Levinson and Cronheim³⁵ the agglutinins in the donor plasma or serum are neutralized by the recipient's blood and tissues, and they have suggested that the pooling of several serums or plasmas in a serum or plasma which has a lowered agglutinin titer. Post-transfusion reactions are conspicuous by their paucity in the latest reports on plasma and serum transfusions despite the absence of preliminary typing and cross matching of the fluids. This seems strange in view of the high incidence of reactions reported by the earlier workers. This reported low incidence of reactions may be due to improvement in the technic of collection and storage and, perhaps, a variation in the criteria of what constitutes a post-transfusion reaction.³⁶ The possible sources of transfusion reactions appear to be

1 Bacterial contamination. Samples of serum and plasma have been found to be contaminated even after initial tests had apparently shown them to be sterile. An undetected contamination might readily account for reactions.

2 Particulate matter, e. g. portions of fibrin clot.

3 Denaturation of the proteins. This may occur from too rapid or excessive heating of the plasma or serum prior to transfusion.

4 High content of hemoglobin. The maximal quantity of free hemoglobin in solution should not exceed 25 mg per hundred cubic centimeters of plasma or serum.

5 High content of potassium. This is due to a loss of potassium into the serum or plasma from the red blood cells (Drew, Edsall and Scudder³⁷). Clegg and Dible³⁸ have noted that the potassium content of serum may rise to 38-40 mg per hundred cubic centimeters (normal level being 16-20 mg per hundred cubic centimeters). There is no evidence at present that such increases of potassium are the cause of transfusion reactions.

6 Allergy. Occasional reactions of an allergic nature, e. g. urticaria, have been reported (Clegg and Dible³⁸).

7 Improper preservatives. Certain preservatives, e. g. phenol, may be the cause of reactions.

8 Incomplete inactivation of the group specific isoagglutinins of the plasma or serum by the body fluids or tissues of the recipient resulting in agglutination of the recipient's red blood cells (Davis³⁹).

The results of human transfusions do not appear to have established the relative efficacy of human plasma and serum. Thus, some have obtained better clinical results with plasma (Strumia, Wagner and Monaghan,³⁴ Brennan,⁴⁰ Black⁴¹), others with serum (Hill, McMichael and Sharpey-Schafer,⁴² Clegg and Dible³⁸). Reactions have been noted more frequently after serum than after plasma transfusions (Ravdin, Stengel and Prushankin,⁴³ Aldrich, Stokes, Killingsworth and McGuinness⁴⁴).

³⁴ Strumia, M. M., Wagner, J. A., and Monaghan, J. F. Use of Citrated Plasma in Treatment of Secondary Shock, *J. A. M. A.* 114: 1337 (April 6) 1940.

³⁵ Levinson, S. O., and Cronheim, Anny. Suppression of Isoagglutinins and Significance of This Phenomenon in Serum Transfusions, *J. A. M. A.* 114: 2097 (May 25) 1940.

³⁶ Report of the Blood Transfusion Association, New York, Jan. 31, 1941.

³⁷ Drew, C. R., Edsall, K., and Scudder, J. *J. Lab. & Clin. Med.* 25: 240, 1939.

³⁸ Clegg, J. W., and Dible, J. H. *Lancet* 2: 294, 1940.

³⁹ Davis, H. A., to be published.

⁴⁰ Brennan, H. J. *Brit. M. J.* 1: 1047, 1940.

⁴¹ Black, D. A. K. *Brit. M. J.* 2: 693, 1940.

⁴² Hill, D. K., McMichael, J., and Sharpey-Schafer, E. P. *Lancet* 2: 774, 1940.

⁴³ Ravdin, I. S., Stengel, Alfred, Jr., and Prushankin, Mitchell. Control of Hypoproteinemia in Surgical Patients, *J. A. M. A.* 114: 107 (Jan. 13) 1940.

⁴⁴ Aldrich, C. H., Stokes, Joseph, Jr., Killingsworth, W. P., and McGuinness, A. C. Concentrated Human Blood Serum as Diuretic in Treatment of Nephrosis. Preliminary Report, *J. A. M. A.* 111: 129 (July 9) 1938.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

THEODORE G. KLUMPF, M.D., Secretary

NORMAL HUMAN SERUM AND NORMAL HUMAN PLASMA.—These are sterile preparations from the blood of human beings who, for six months prior to venesection, have been free, as far as can be determined, of diseases transmissible by blood transfusion. The blood is withdrawn under sterile technic and kept sterile throughout the entire process. Serologic tests for syphilis are carried out on the donors immediately before the blood is withdrawn, and sterility tests are subsequently made on each individual lot of bulk serum and plasma. If these tests are negative, individual lots are pooled and a preservative is added. The serum or plasma is then filtered through a bacteria-excluding filter and dispensed into suitable containers. The final product is tested for sterility according to the rules and regulations of the National Institute of Health.

Actions and Uses.—Normal human plasma and normal human serum are administered in the treatment of surgical and traumatic shock, in the treatment of burns when loss of available plasma occurs, to combat hypoproteinemia, and as a temporary substitute for whole blood in the treatment of hemorrhage when whole blood is not immediately available. Plasma and serum may be considered satisfactory substitutes for whole blood except in those cases in which the administration of red blood corpuscles is regarded as essential. The relative clinical efficacy of plasma and serum does not appear to have been determined, but reactions do seem to appear more frequently after serum than after plasma transfusions.

Sharp & Dohme, Inc., Philadelphia

Lyovac Rapidly Lyophilized Normal Human Plasma.—A sterile preparation of desiccated plasma obtained from the fluid portion of fresh citrated human blood. The blood is separated from the corpuscles by centrifugation and subjected to a process of rapid freezing at very low temperature. Dehydration from the frozen state and preservation are accomplished under vacuum. It is claimed that the material may be administered without typing or cross matching and may be used up to five years after the date of manufacture. It is marketed in packages of one "vacule" ampoules to yield 250 cc of plasma when restored to its original volume by the accompanying ampoule of 250 cc of pyrogen free distilled water. Each package of plasma and water is accompanied by a separate package containing the equipment necessary for intravenous injection. The plasma contains as a preservative phenylmercuric nitrate 1/25,000, and the distilled water contains the same preservative in the proportion of 1/100,000.

Dosage.—"Lyovac" rapidly lyophilized normal human plasma, when restored to liquid form, is purported to have uses of ordinary human plasma and is administered intravenously. Amounts equivalent to those employed in the transfusion of whole blood have been suggested, but it should be remembered that 250 cc of this preparation is, in plasma content, the approximate equivalent of 500 cc of whole blood.

BILE SALTS-FAIRCHILD (See New and Nonofficial Remedies, 1941, p. 147)

The following dosage form has been accepted:

Capsules Bile Salts Fairchild, 3 grains

RIBOFLAVIN (See New and Nonofficial Remedies, 1941, p. 553)

The following dosage form has been accepted.

Tablets Riboflavin Smith Dorsey, 3 mg
Prepared by Smith Dorsey Co., Lincoln, Neb.

THIAMINE HYDROCHLORIDE-U. S. P. (See New and Nonofficial Remedies, 1941, p. 551).

The following dosage forms have been accepted:

Tablets Thiamine Hydrochloride Smaco, 1 mg. Each tablet contains 1 mg of thiamine hydrochloride equivalent to 333 U. S. P. units.
Prepared by the S. M. A. Corporation, Cleveland.

Tablets Thiamine Hydrochloride Smaco, 3 mg. Each tablet contains 3 mg of thiamine hydrochloride equivalent to 1,000 U. S. P. units.
Prepared by the S. M. A. Corporation, Cleveland.

Solution Thiamine Hydrochloride Smaco 3 mg per cc, 1 cc ampuls. Each cubic centimeter contains 3 mg of thiamine hydrochloride, equivalent to 1,000 U. S. P. units, in sterile distilled water.

Prepared by the S. M. A. Corporation, Cleveland.
Solution Thiamine Hydrochloride Smaco, 10 mg per cc, 1 cc ampuls. Each cubic centimeter contains 10 mg of thiamine hydrochloride, equivalent to 3,333 U. S. P. units, in sterile distilled water.
Prepared by the S. M. A. Corporation, Cleveland.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 13, 1941

ETIOLOGY OF ECLAMPSIA

The so-called anaphylactic theory of puerperal eclampsia, usually discredited, is now supported by Yamada¹ of the Gynecologic and Obstetric Institute, Imperial University, Kyoto. The Japanese gynecologist sensitized virgin female guinea pigs (250 Gm.) by the intra-abdominal injection of 0.5 cc. of heat inactivated serum from eclamptic patients, with control injections of noneclamptic pregnancy serum. Other groups of guinea pigs were given a single intra-abdominal injection of 2 cc. of 10 per cent aqueous suspension of dehydrated pulverized normal or eclamptic placentas. After an incubation period of two weeks the isolated uteri of these animals were tested by the Schultz-Dale technic. Yamada found that the isolated uterine musculature of guinea pigs sensitized to eclamptic serum is thrown into acute anaphylactic tetanus on the addition of 0.2 Gm. of eclamptic placental proteins, control tests with noneclamptic placental proteins gave negative results. Conversely, uteri sensitized to eclamptic placental proteins will react with human eclamptic serum but not with noneclamptic pregnancy serum. Both noneclamptic placenta and noneclamptic serum are nonantigenic by his technic.

Yamada concludes for such tests that the eclamptic placenta contains an abnormal protein which is highly antigenic and that puerperal eclampsia is a secondary allergic phenomenon, caused by a specific reaction between these perverted placental proteins and homologous maternal antibodies.

There seems to be nothing essentially new in this theory. A generation ago, Rosenau and Anderson found that guinea pigs could be sensitized to guinea pig placenta. Attempts to establish the implied anaphylactic theory of eclampsia, however, were unsuccessful, since the characteristic anatomy of puerperal eclampsia is never seen in experimental anaphylaxis. Yamada found, however, that characteristic eclamptic degenera-

tion of the spleen, liver, kidneys and adrenal glands can be produced in pregnant rabbits by repeated intravenous injections of eclamptic placental proteins, control tests with noneclamptic placenta giving much less pronounced degenerative changes. In his opinion these exaggerated degenerative changes confirm his theory that an abnormal, highly antigenic protein is given off by the eclamptic placenta, reacting with homologous maternal antibodies in such a way as to account for the complete clinical picture of eclampsia.

Yamada's theory differs from the discredited theory of Rosenau and Anderson mainly in assuming a primary heterologization of placental proteins, eclampsia thus becoming a primary biochemical dysplasia of fetal tissues. Interest in this alleged placental perversion is heightened by the evidence recently reported by Levine and his co-workers,² which led them to believe that many cases of puerperal eclampsia are due to maternal isolysins formed against paternal Rh agglutinogens in fetal blood.

MALPRACTICE ACTIONS AGAINST ARMY MEDICAL OFFICERS AND EXAMINING PHYSICIANS FOR LOCAL SELECTIVE SERVICE BOARDS

A person in the military service may claim that an officer of the medical corps has in some manner been guilty of malpractice in treating or examining him in the line of duty. A similar claim for alleged malpractice may be pressed against an examining physician for a local Selective Service board by a selectee called before that board. The fact that a person is in the military service, or is in the course of being inducted therein, does not prevent him from asserting his civil rights as long as the interests of the service or of national defense are not concerned. Hence the Judge Advocate General of the Army has held, quite properly, that members of the Army are entitled to the same civil rights of action between one another with reference to suits for malpractice or negligence as they would have in civil life.¹ Without doubt the same degree of care, diligence and professional ability required of any physician with respect to the care of patients in civilian life is required by law of a medical officer of the Army or of an examining physician for a local board in his care or examination of a member of the service or of a selectee called for the purposes of induction. For a departure from such standards resulting in harm to the patient the medical officer or the examining physician would be liable in a civil suit by the aggrieved patient the same as though both the patient and the physician were in civil life. The medical officer, then, in the Army and the physician acting for a local Selective Service board by virtue of his service or function stands in no different position with respect to answer-

¹ Yamada, K. I.: Effect of Visible Light on Biologic Reaction of Eclamptic Blood Serum and Eclamptic Placenta, *Jap. J. Obst. & Gynec.* 23:141 (June) 1940.

² Levine, Philip, Katzin, E. M., and Barnham, J. - Immunization in Pregnancy, *J. A. M. A.* 116:825 (March 1) 1941
1 *J. A. G.* 707, March 6, 1934

ability to his patients from that of a physician acting solely in a civil capacity.

However, were a malpractice claim to be pressed against an army medical officer or an examining physician for a local board for alleged malpractice in the performance of his official duties the government itself would no doubt provide defense for the physician accused. It has been the practice of the Attorney General in the past to provide, on the request of an interested government department, or agency, defense for government officers or agents in civil suits arising out of the activities in the course of the discharge of their official duties. A communication from the office of the Judge Advocate General of the Army dated May 1, 1941 indicates that in the past the War Department itself has not undertaken the defense of a civil suit for malpractice brought against a member of the medical corps but that the defendant medical officer has had the right to have the case removed to a federal court and to be defended by a United States attorney designated by the Department of Justice. If, however, according to this communication, a judgment was to be rendered against such a medical officer, there is no provision by law by which the judgment could be paid by the government or by which the defendant physician could be reimbursed by the government.

Similar defense in all probability would be available to a physician examining for a local Selective Service board, accused of malpractice in connection with his duties for the local board. If such a suit is filed, a communication from the Selective Service system states:

The National Selective Service System will act as follows:

1. Request the Attorney General to instruct the United States District Attorney to appear on behalf of the United States government or to assign a special representative of the Attorney General's office to the case.
2. Supply expert medical testimony from our own staff.
3. Request outstanding experts to testify without expense to the individual being sued.
4. Cooperate in a reexamination of the registrant if such is deemed desirable.
5. Do anything else which is within our power to assist in a thorough and complete presentation in the case in order to make certain that no unjustified claim shall succeed and,
6. If a judgment is secured, present a bill to Congress and recommend its adoption, looking toward the paying of the judgment by the United States government.

While the defense measures indicated that will be available to medical officers and examining physicians for local boards will undoubtedly be helpful, physicians concerned cannot safely discontinue such forms of malpractice insurance protection as they previously have carried. In the communication previously referred to, the Judge Advocate General's office states that malpractice suits by persons in military service against members of the medical corps have thus far been quite rare. Therefore, since patriotic cooperation may be expected from all persons and corporations during the

national emergency, especially favorable premium rates should be obtainable from insurance companies for policies to protect physicians in the service and local board physicians against claims for malpractice that may rise from the performance of their duties to the service and to the national government.

VITAMIN C AND AMINO ACID METABOLISM

The elucidation of some of the roles which vitamins may assume in the utilization and metabolism of certain cellular metabolites has aided in a clearer understanding of the need for these dietary accessories for normal health and well being. The functioning of vitamin B₁ as a coenzyme for carboxylase, and the presence of riboflavin and nicotinic acid as integral parts of certain cellular enzymes concerned with biologic oxidations, have intimately related these vitamins to essential cell processes. This evidence answers the perplexing problem of how a dietary essential functions and explains why it is an essential substance which must be supplied in optimal amounts in the food. Although the biochemist may point with pride to his explanations of the mode of participation of certain of the B vitamins in metabolic processes, it is still necessary to continue the search for patterns of body reactions into which the other vitamins will fit. However, recent studies have implicated ascorbic acid directly in processes of metabolic importance, notably those concerned with the metabolism of the aromatic amino acids phenylalanine and tyrosine.

A definite relationship between vitamin C and tyrosine and phenylalanine metabolism has recently been described by Levine and his colleagues.¹ These Cornell University Medical College investigators observed that premature infants receiving diets of relatively high protein content (5 Gm. or more per kilogram daily) exhibit a spontaneous defect in their metabolism of tyrosine and phenylalanine. The defect was manifested by the excretion of parahydroxyphenyllactic and parahydroxyphenylpyruvic acids in the urine; the excretion of these compounds was accentuated by the administration of either tyrosine or phenylalanine. This particular aberration in the metabolism of these amino acids differs from other types of experimental and clinical conditions in which they have been implicated in that more of the hydroxyphenyllactic acid is excreted than of the corresponding keto acid. Homogentisic acid was not present in the urines of the infants studied. Furthermore, although full term infants fed similar diets showed no spontaneous abnormality in the metabolism of the aromatic amino acids, the defect was precipitated by the ingestion of a single dose of 1 Gm. per kilogram of phenylalanine by one infant and of tyrosine by another.

1. Levine, S. Z.; Marples, Eleanor, and Gordon, H. H.: *J. Clin. Investigation* 20: 199 (March) 1941. Levine, S. Z.; Gordon, H. H., and Marples, Eleanor, *ibid.*, p. 209.

As the premature infants had been fed diets of vitamin C free cow's milk, the effect of this vitamin on the metabolic picture was studied. The parenteral or oral administration to 9 infants of vitamin C in single or divided doses totaling 100 to 500 mg. resulted without exception in the prompt disappearance of abnormal metabolites from the urine. Similarly, vitamin C prophylaxis abolished the urinary excretion of these metabolism products by full term infants given large single doses of phenylalanine or tyrosine. Moreover, the reappearance of the hydroxy and keto acids in the urine was observed in 2 infants following withdrawal of vitamin C, and resumption of the vitamin therapy again caused disappearance of these acids from the urine. The reversibility of this condition differentiates it from the hereditary anomalies alkaptonuria and phenylpyruvic oligophrenia, both of which are claimed to be unaffected by vitamin C administration.¹

These interesting observations strongly suggest an important role for vitamin C in the metabolism of the aromatic amino acids in the growing child. The metabolic defect, either spontaneous or induced, existing because of a low supply of this vitamin may be of value in the early detection of vitamin C deficiency in premature and young infants. The immediate correction of the metabolic error, following vitamin C administration, occurred in the absence of any appreciable rise in the ascorbic acid level of the plasma, thus lending further importance to the possible clinical value of the observations in detecting incipient vitamin C deficiency. In addition to establishing a definite role for vitamin C in the metabolism of aromatic amino acids, the data reported suggest other problems whose solution should be of value to physiology and clinical medicine.

Current Comment

PREFERENCE RATING FOR RESEARCH SUPPLIES AND EQUIPMENT

The great importance of scientific research to the defense program has just been recognized by granting a high defense priority rating to equipment needed by research laboratories. The Director of Priorities, E. R. Stettinius Jr., signed an order which became effective August 30 and remains effective until Feb. 28, 1942, granting the priority rating of A-2 to such equipment. There are in the United States some two thousand research laboratories which use small quantities of about five thousand chemicals and require in their work twenty-five thousand different instruments. Any laboratory having difficulty in securing essential materials for scientific research and wishing to qualify for the A-2 rating should apply to the Office of Production Management, Chemical Branch, Washington, D. C., on

form PD-88. In its application the laboratory must state the type of service rendered or products manufactured. The Office of Production Management has entered into an agreement with the National Academy of Sciences whereby the Division of Priorities will have the benefit of the advice of the academy with respect to all applications received. When a laboratory files an application, it should state the number of copies of the order it desires so that it may apply the rating to deliveries to it by its suppliers if necessary and enable its suppliers in turn to apply the rating to deliveries to them by their sub-suppliers. Each order issued to a laboratory will bear a serial number assigned by the Division of Priorities. If a laboratory is unable to obtain some essential material even with the A-2 rating, it should file an application with the Priorities Division on form PD-1; then, provided the research product is considered sufficiently important, the Priorities Division will issue an individual preference rating certificate, assigning a higher rating to a particular delivery of specified material. Further details concerning this matter may be obtained from the Priorities Division of the Office of Production Management.

PAUL V. McNUTT BECOMES DIRECTOR OF HEALTH, WELFARE AND RELATED ACTIVITIES

Under the heading of Medical Preparedness in this issue of *THE JOURNAL* appears an executive order, signed by the President of the United States last week, by which Mr. Paul V. McNutt, who has been Coordinator for Health, Welfare and Allied Activities, is made director of a similar agency now established in the Office of Emergency Management. This change is important from the point of view of organization and coordination of the work undertaken. Careful reading of the executive order indicates that an attempt will be made to secure coordination of medical affairs, including both governmental and private agencies. The director is authorized, moreover, to appoint representatives of various private agencies on the committees which will take the responsibility for study and advice on various problems concerned with the national defense. Incidentally, the Health and Medical Committee (of which Dr. Irvin Abell is chairman) is continued as a part of the office of the director; however, the director of the Division of Medical Sciences of the National Research Council, Dr. Lewis H. Weed, is replaced by the chairman of the Committee on Medical Research and Development, Dr. A. Newton Richards. Members of the agency which Mr. McNutt will direct, it will be observed, work entirely without compensation in addition to any other positions they may hold, but funds are provided for maintenance and necessary expenses incidental to the conduct of the work. No doubt the new arrangement moves a step further, at least so far as relates to the national emergency, in coordinating all the medical aspects of medicine and health of the government except those of the Army and Navy, under a single directing hand.

MEDICAL PREPAREDNESS

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.

OFFICE OF DEFENSE HEALTH AND WELFARE SERVICES IN THE EXECUTIVE OFFICE OF THE PRESIDENT

MR. PAUL V. McNUTT APPOINTED DIRECTOR

Following is an executive order promulgated by the President, Sept. 3, 1941:

By virtue of the authority vested in me by the Constitution and statutes of the United States, and in order define further the functions and duties of the Office for Emergency Management of the Executive Office of the President with respect to the national emergency as declared by the President on May 27, 1941 for the purpose of assuring adequate health and welfare services to meet needs of the national defense program, it is hereby ordered:

1. The term "health and welfare services" as used in this Order means all health, welfare, medical, nutrition, recreation, and related services including those aspects of education under the jurisdiction of the Federal Security Agency.

2. There is established within the Office for Emergency Management of the Executive Office of the President the Office of Defense Health and Welfare Services, at the head of which the Federal Security Administrator shall serve as Director. The director shall discharge and perform his responsibilities and duties under the direction and supervision of the President. The Director shall receive no salary or other remuneration as such, but shall be entitled to actual and necessary transportation, subsistence, and other expenses incidental to the performance of his duties.

3. Subject to such policies, regulations, and directions as the President may from time to time prescribe, the Office shall:

a. Serve as the center for the coordination of health and welfare services made available by the departments and agencies of the Federal Government, and other agencies public and private, to meet the needs of State and local communities arising from the defense program; and take necessary steps to secure the cooperation of the appropriate Federal departments and agencies relative thereto.

b. Make available to States and localities, upon request, the services of specialists in health and welfare activities to assist in the planning and execution of such local and State programs.

c. Study, plan, and encourage measures designed to assure the provision of adequate defense health and welfare services to the citizens of the Nation during the period of the emergency, and coordinate studies and surveys made by Federal departments and agencies with respect to these fields.

d. Keep the President informed with respect to progress made in carrying out this Order; and perform such related duties as the President may from time to time assign or delegate to it.

4. The Director may provide for the internal organization and management of the Office of Defense Health and Welfare Services. He shall obtain the President's approval for the establishment of the principal subdivisions of the Office and the appointment of the heads thereof.

5. In the study of problems and in the discharge of its functions and responsibilities it shall be the policy of the Office of Defense Health and Welfare Services to collaborate with and to utilize, in so far as practicable, the facilities and services of existing departments and agencies which perform related functions. Furthermore, it shall be the policy of the Office of Defense Health and Welfare Services in carrying out its functions and duties to work with and through the State and local defense councils and other appropriate State and local agencies,

and in this connection to cooperate and work in conjunction with the Office of Civilian Defense in its relationships with State and local groups.

6. There shall be in the Office of Defense Health and Welfare Services a Health and Medical Committee to consist of a Chairman to be appointed by the President, the Surgeon General of the Army, the Surgeon General of the Navy, the Surgeon General of the United States Public Health Service, the Chairman of the Committee on Medical Research of the Office of Scientific Research and Development, and such others as the President may from time to time determine. The Committee shall advise the Director regarding the health and medical aspects of national defense exclusive of medical research and assist in the coordination of health and medical activities affecting national defense. The members of the Committee shall serve as such without compensation but shall be entitled to actual and necessary transportation, subsistence and other expenses incidental to the performance of their duties.

7. The Director is authorized to appoint such advisory committees and subcommittees, with respect to particular aspects of health, welfare, nutrition, recreation, and related activities as he may find necessary or desirable to assist him in the performance of his duties. Such advisory committees may include representatives from Federal departments and agencies, State and local governments, private organizations and the public at large. The members of advisory committees shall serve as such without compensation, but shall be entitled to actual and necessary transportation, subsistence, and other expenses incidental to the performance of their duties.

8. Within the limits of such funds as may be appropriated or allocated to the Office of Defense Health and Welfare Services by the President, the Director may employ necessary personnel and make provision for the necessary supplies, facilities, and services through the Federal Security Agency. The Office of Defense Health and Welfare Services may use such statistical, informational, fiscal, personnel, and other general business services and facilities as may be made available through the Office for Emergency Management.

FRANKLIN D. ROOSEVELT,

THE WHITE HOUSE,
September 3, 1941.

PROVISION OF ADEQUATE LABORATORY SERVICES IN MILITARY HOSPITALS

Abstract of Circular Letter Issued by the Office of
the Surgeon General of the United States Army

The entire structure of modern medicine and the accuracy which has been attained in the diagnosis, treatment and prevention of disease are based on a solid foundation of facts established through careful fundamental studies made in the various basic laboratory sciences. Moreover, the degree of efficiency to be expected in the routine practice of scientific medicine today—whether in the care of the sick or in the control of disease, either in civilian or in military populations—depends primarily on the adequacy of the laboratory personnel and facilities available. The Medical Department has always appreciated the importance of affording to the Army the best

laboratory services obtainable. However, during the present emergency the rapid expansion of all Medical Department activities and the lack of trained reserve personnel have resulted in some delay in the development of adequate laboratory services in certain army hospitals.

SURVEY OF PRESENT DIAGNOSTIC LABORATORY SERVICES

In order to provide more satisfactory diagnostic laboratory services throughout the Army, it is desired that the commanding officer of each hospital and dispensary make a careful study to determine the adequacy of the diagnostic laboratory personnel, housing, equipment and supplies now provided for his command, with a view to taking whatever steps may be necessary to develop a satisfactory service. The adequacy of the present service should be determined on a functional basis, and this will depend primarily on the number of patients to be served. However, in certain localities this fundamental criterion may require modification because of such special factors as geographic isolation, inadequate transportation facilities or the existence of special disease problems. On completion of the study, a detailed report of the status of the laboratory service should be prepared, following the attached general outline, and this report should be forwarded without delay through medical channels to this office.

CRITERIA TO BE CONSIDERED IN SURVEY

The following remarks on the functions, personnel, organization, housing, equipment and supplies will serve to indicate the general policy to be followed. It is realized, however, that in individual cases local conditions may necessitate a change in this general plan.

Functions.—It is the desire of this office that every hospital and dispensary in the Army be provided with a modern diagnostic laboratory service which is adequately staffed and equipped to perform efficiently all the procedures required for the accurate diagnosis and treatment of the sick. Owing to necessary limitations in personnel and equipment, smaller institutions are expected to utilize larger hospital or corps area laboratories in their vicinity for the performance of the more complicated laboratory procedures. Precipitin tests for syphilis (Kahn) will be done in laboratories of all army hospitals of one hundred and fifty or more beds. Wassermann and colloidal gold tests will be performed, when indicated, in general hospitals, in station hospitals of one thousand or more beds and in corps area laboratories (S. G. O. Circular Letter 10, dated Feb. 13, 1941). Histopathologic examinations of tissue will be done in general hospitals and station hospitals with one thousand or more beds. In addition to these facilities for the diagnosis of histopathologic specimens of tissue in larger hospitals, a consultative service is available at the Army Medical Museum for the study of such specimens in which further confirmation of diagnosis is desired (see paragraph 24, S. G. O. Circular Letter 1, dated Jan. 2, 1941). Similar services in connection with other types of laboratory examinations are available at corps area laboratories and the Army Medical School.

Personnel.—Sufficient carefully trained laboratory officers and enlisted or civilian technicians should be assigned to perform all the diagnostic procedures indicated for the respective medical installations.

COMMISSIONED OFFICERS

In every instance the chief of the laboratory service must be an officer of the Medical Corps with general laboratory training and experience. However, his assistants may be officers either of the Medical, Sanitary or other corps of the Medical Department, provided only fully qualified individuals with the necessary specialized knowledge are selected for such duty. In the event that well qualified commissioned personnel are not available locally, additional reserve officers qualified for assignment to laboratories as clinical pathologists and protozoologists, bacteriologists, chemists, serologists and histopathologists, respectively, should be obtained by formal request for such personnel through the proper military channels.

ENLISTED TECHNICIANS

If enlisted men of suitable training and grade are not available locally, they should be obtained by formal request through the proper military channels or by sending members of the local detachment to the army training schools for laboratory technicians (letter W. D., A. G. O., Subject: Orders. File A. G. 220.63 [5-21-41] E. A., dated May 28, 1941; and S. G. O. Circular Letter 14, dated Feb. 26, 1941).

CIVILIAN TECHNICIANS

When authorized, well qualified trained civilian laboratory technicians should be employed in hospital and dispensary laboratories to supplement the work of army personnel.

Housing.—Sufficient space should be allotted to dispensary and hospital laboratories for the performance of the various types of laboratory work, the storage of supplies, the housing of animals and the maintenance of records. A single large room assigned exclusively to the laboratory service may suffice in dispensaries and hospitals with less than one hundred and fifty beds that normally do only clinical pathologic examinations and the collection and forwarding of specimens for the more complicated laboratory procedures. However, larger hospitals require additional space for work rooms and offices in order that the various laboratory specialties may be handled efficiently. It is realized that the space now provided at some hospitals is inadequate for the proper functioning of the laboratory, and, where local administrative changes cannot provide the additional room needed, specific recommendations should be made for the improvement of each local situation.

Equipment and Supplies.—The equipment and supplies required for the laboratories of dispensaries and hospitals will depend on the nature and amounts of the work to be performed. If the equipment and supplies now on hand are not adequate for local needs, immediate steps should be taken to advise the Surgeon General of additional items required. In the interests of economy it is advisable to standardize recognized laboratory procedures as far as possible and to utilize standard items as listed in the Medical Department supply catalogue for the performance of these procedures. However, if these items are not adequate, additional nonstandard items should be provided as needed.

MEDICAL OFFICERS ASSIGNED TO PARACHUTE BATTALIONS

Two medical officers and fifteen medical department enlisted men, all qualified parachutists, have been assigned to each of the new infantry parachute battalions in training at Fort Benning, Ga. The medical personnel was selected for high standard of physical ability and professional attainments from a list of volunteers. Additional medical personnel is now being selected to serve with the newly organized 503d Parachute Battalion. In maneuvers and in battle this medical personnel will accompany parachute troops when they jump from airplanes and will set up aid stations to handle casualties until they can be evacuated to hospitals. Special medical equipment, which can be dropped by parachutes, has been designed for the medical detachment.

RED CROSS BUILDINGS FOR ARMY POSTS

The War Department announced on August 25 approval of plans by the American Red Cross to construct office and headquarters buildings at sixty-two Army posts, all costs of construction and appurtenant utilities and of operation and maintenance to be paid by the Red Cross. The construction is expected to cost about \$1,250,000. The buildings will conform generally to local types of architecture, some to be of wood, along Colonial lines, some in Mission style, others of brick construction. Plans provide for several sizes of buildings to conform with the dimensions of available building sites. Army officers in the corps areas will act in an advisory capacity in designating appropriate locations. Zone constructing quartermasters and district engineers are to furnish technical advice

in coordinating these buildings with other camp construction. The structures are designed to contain offices in one wing, living quarters for Red Cross personnel in an opposite wing and lecture rooms and reception rooms in the center.

DOCTORS FOR BRITAIN

By the week ended September 4, a total of 230 applications had been received from physicians wishing to enroll with the Royal Army Medical Corps. Of these, 138 had been found unqualified because of age, lack of citizenship or other similar reasons. Ninety-two have been qualified and 42 have been given passports to Great Britain; the remaining 50 are in process.

CANDY ADDED TO SOLDIERS' CANNED RATIONS

The Army has made a change in its type C canned field rations. The ounce of chocolate has now been replaced by five pieces of hard candy, individually wrapped and in assorted flavors. The substitution is based on results of recent tests on fatigue conducted at the University of Minnesota, which prove that a soldier has more energy output if sugar is consumed periodically throughout the day rather than in large quantities at mealtime. The candies are issued on the theory that they will not be eaten at mealtime but will be consumed from time to time during long marches.

MILITARY MEDICAL ASSOCIATION AT FORT KNOX

Medical officers of the Armored Force and other medical officers at Fort Knox, Kentucky, have formed an organization known as the Armored Force and Fort Knox Military Medical Association, for the purpose of disseminating tactical information gained by officers of the Armored Force, and professional information gained by those concerned with strictly professional duties, and to familiarize all concerned with activities of sanitary inspection and medical problems of modern warfare. Col. Robert H. Duenner, M. C., Armored Force, was elected president of the association. The regular meetings, which are held at the Officers' Club at Fort Knox the second Tuesday

of each month, have been attended by more than one hundred officers. At the June 17 meeting Major M. C. Thomas, M. C., read a paper on "Epidemics and Hospitalization"; at the July 29 meeting Major L. H. Ginn, M. C., Commander of the 47th Medical Battalion, spoke on "Medical Service of the Armored Division," and at the August 12 meeting Lieut.-Col. N. M. Neate, V. C., gave an illustrated talk on food inspection. At the last meeting Major Gen. Jacob L. Devers, Commander of the Armored Force, was a guest of honor.

ABOUT FIFTEEN TRAINEES IN EACH THOUSAND ARE REJECTED

The results of a study of the causes for rejecting 36,800 out of 243,955 men who were examined for military training by induction boards throughout the nation during March and April were announced September 2, by the War Department. The study shows that the principal causes of rejection were defective eyes, teeth, and mental and nervous disorders. The Surgeon General's study, which was based on weekly reports from induction boards during the two month period, shows that 15.07 per

Principal Causes of Rejection

Cause	Prior to February 10	March and April
Eye	13.34	11.27
Ear, nose, throat	9.52	8.71
Teeth	19.42	13.15
Hernia	5.26	3.90
Feet	3.64	2.15
Musculoskeletal	4.10	5.89
Cardiovascular	6.18	7.88
Lung	4.99	6.16
Nervous and mental	10.47	16.42
Other	23.08	24.47
Total	100.00%	100.00%

thousand men were rejected during March and April. A previous study of reports on examinations for all trainees prior to March showed that 15.4 per thousand were rejected. No effort was made to classify the trainees, for the purpose of the study, into age groups. The accompanying table offers a percental comparison of the principal causes of rejection.

ARMY RESERVE OFFICERS ORDERED TO ACTIVE DUTY SEVENTH CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Seventh Corps Area, which comprises the states of North Dakota, South Dakota, Minnesota, Nebraska, Iowa, Kansas, Missouri, Arkansas and Wyoming:

AKRE, Osmund Harald, 1st Lieut., Clarkfield, Minn., Air Corps Station (nonflying status), McChord Field, Tacoma, Wash.
 ALLIBAND, George Thomas, 1st Lieut., Omaha, Air Corps Station (nonflying status), Fort Douglas, Utah.
 ALLISON, Lester Fischer, Captain, Greybull, Wyo., Air Base (nonflying status), Fresno, Calif.
 AMBRUSKO, John Stephen, 1st Lieut., Rochester, Minn., Basic Flying School (nonflying status), Taft, Calif.
 AYERS, LeRoy Judson, 1st Lieut., Omaha, Air Corps Station (nonflying status), McChord Field, Tacoma, Wash.
 BACA, Donaciano Encarnacion, 1st Lieut., Papillion, Neb., Corps Area Service Command Station Hospital, Fort Riley, Kan.
 BEAL, Raymond Jameson, 1st Lieut., Fredonia, Kan., Air Corps Station (nonflying status), Fort George Wright, Spokane, Wash.
 BEARE, John Byron, 1st Lieut., Rochester, Minn., Advanced Flying School (nonflying status), Mather Field, Calif.
 BELZER, Meyer Simon, Major, Minneapolis, 6th Infantry Division, Fort Leonard Wood, Mo.
 BODEN, Herbert Neil, 1st Lieut., Truro, Iowa, Air Base (nonflying status), Fresno, Calif.
 BOYD, Arthur Montgomery, 1st Lieut., St. Louis, Air Base (nonflying status), Fresno, Calif.
 ROYSEN, John Edward, 1st Lieut., Pelican Rapids, Minn., Air Base (nonflying status), Fresno, Calif.
 BROWNSON, Bradley Claude, 1st Lieut., Rochester, Minn., Air Corps Station (nonflying status), McChord Field, Tacoma, Wash.
 BUNTING, William Penfield, 1st Lieut., Kansas City, Mo., Air Corps Station (nonflying status), Fort George Wright, Spokane, Wash.

BURGESS, Roy Earle, 1st Lieut., Gettysburg, S. D., Air Base (nonflying status), Fresno, Calif.
 BURKS, James Willis, Jr., 1st Lieut., Rochester, Minn., Air Corps Station (nonflying status), Fort George Wright, Spokane, Wash.
 BURNHAM, Wesley Howard, 1st Lieut., Minneapolis, Corps Area Service Command Station Hospital, Fort Leonard Wood, Mo.
 CAIN, James Clarence, 1st Lieut., Rochester, Minn., Air Corps Gunnery School (nonflying status), Las Vegas, Nev.
 CARTER, Claud E., Captain, St. Louis, 35th Infantry Division, Camp J. T. Robinson, Ark.
 CATINELLA, Paul Joseph, 1st Lieut., Rochester, Minn., Basic Flying School (nonflying status), Taft, Calif.
 CHLAD, Arnold Joseph, 1st Lieut., St. Paul, Air Corps Station (nonflying status), McChord Field, Tacoma, Wash.
 CLINE, Edward Wilburn, 1st Lieut., Platte City, Mo., 35th Infantry Division, Camp J. T. Robinson, Ark.
 COHN, Mortimer Monty, 1st Lieut., Cheyenne Agency, S. D., Air Base (nonflying status), Fresno, Calif.
 CRELLIN, Henry Graham, 1st Lieut., Lyons, Neb., Air Corps Station (nonflying status), Moffett Field, Calif.
 CROWLEY, Daniel Francis, Jr., 1st Lieut., Rochester, Minn., Air Corps Station (nonflying status), McChord Field, Tacoma, Wash.
 DALTON, Arthur Rex, 1st Lieut., St. Louis, Air Corps Station (nonflying status), McChord Field, Tacoma, Wash.
 DAVIS, Edward Valentine, Captain, Kirksville, Mo., 2d Medical Battalion, Fort Sam Houston, Texas.
 DIXON, John Rex, 1st Lieut., Linneus, Mo., Advanced Flying School, Ellington Field, Houston, Texas.
 DUMINSTR, Fred, 1st Lieut., Sioux Falls, S. D., Advanced Flying School (nonflying status), Mather Field, Calif.
 EAST, JOHN PRATIER, 1st Lieut., Northome, Minn., Advanced Flying School, Ellington Field, Houston, Texas.
 ELDERS, John Byron, 1st Lieut., Walnut Ridge, Ark., 2d Cavalry Division, Fort Riley, Kan.
 ELLIS, Fred Arthur, 1st Lieut., St. Louis, Advanced Flying School (nonflying status), Mather Field, Calif.
 FREEDMAN, Harold Charles, 1st Lieut., Minneapolis, Basic Flying School (nonflying status), Taft, Calif.

- FRIED, David Daniel, 1st Lieut., Bigfork, Ark., Air Corps Gunnery School, nonflying status, Las Vegas, Nev.
- GACUSANA, Jose Miranda, 1st Lieut., Sharon, Kan., Air Corps Gunnery School, nonflying status, Las Vegas, Nev.
- GANLEY, William Coyle, 1st Lieut., Kansas City, Mo., Advanced Flying School (nonflying status), Mather Field, Calif.
- GEISSLER, Gerald, 1st Lieut., Hinkle, Minn., Air Base (nonflying status), Pendleton, Ore.
- GERDE, William Feder, 1st Lieut., St. Paul, Air Corps Station (nonflying status), Fort George Wright, Spokane, Wash.
- GRACE, Jesse Kent, 1st Lieut., Belleville, Ark., Air Base (nonflying status), Boise, Ida.
- GRANT, Russell B., 1st Lieut., Rochester, Minn., Corps Area Service Command Station Hospital, Fort I. E. Warren, Wyo.
- GRINDELL, George Alfred, 1st Lieut., St. Louis, Air Corps Station (nonflying status), Mather Field, Calif.
- GROSSMAN, Milton David, 1st Lieut., Sioux City, Iowa, Basic Flying School (nonflying status), Taft, Calif.
- HAIGLER, Frederick Hemmann, 1st Lieut., Cherokee, Kan., Air Base (nonflying status), Boise, Ida.
- HAIGLER, Samuel Hartley, Jr., 1st Lieut., Rochester, Minn., Air Corps Station (nonflying status), Fort George Wright, Spokane, Wash.
- HAMILTON, Eugene H., 1st Lieut., Hannibal, Mo., Air Corps Station (nonflying status), Fort George Wright, Spokane, Wash.
- HAW, Marvin Tinsley, Jr., Captain, Bonne Terre, Mo., Air Base (nonflying status), Fresno, Calif.
- HAWORTH, Kenneth Walden, Captain, Pratt, Kan., 2d Medical Battalion, Fort Sam Houston, Texas.
- HERVERT, William James, 1st Lieut., Valparaiso, Neb., Air Base (nonflying status), Boise, Ida.
- HILL, John Roger, 1st Lieut., Rochester, Minn., Air Corps Gunnery School, nonflying status, Las Vegas, Nev.
- HODGSON, Frank Harrison, 1st Lieut., Kansas City, Mo., Engineer Replacement Training Center Infirmary, Fort Leonard Wood, Mo.
- HOLLO, Vencel William, 1st Lieut., St. Louis, Basic Flying School (nonflying status), Taft, Calif.
- HOLLWEG, Kenneth Charles, 1st Lieut., Kansas City, Mo., Air Corps Station (nonflying status), Fort George Wright, Spokane, Wash.
- HONICH, Nicholas Joseph, 1st Lieut., O'Fallon, Mo., Air Base (nonflying status), Boise, Ida.
- HOPSON, George, 1st Lieut., Rochd., S. D., Air Corps Station (nonflying status), Fort George Wright, Spokane, Wash.
- HOSPODARSKY, Leonard John, Captain, Ridgeway, Iowa, Air Base (nonflying status), Boise, Ida.
- HOWE, Rulon Fullmer, 1st Lieut., Rochester, Minn., Air Corps Station (nonflying status), Fort George Wright, Spokane, Wash.
- IACOBUS, Marcus Ryland, 1st Lieut., Letcher, S. D., Basic Flying School (nonflying status), Taft, Calif.
- JOHNSON, Clive Roland, 1st Lieut., Rochester, Minn., Air Corps Station (nonflying status), McChord Field, Tacoma, Wash.
- JOHNSTON, William Wathen, 1st Lieut., Helena, Ark., 2d Cavalry Division, Fort Riley, Kan.
- JONES, Lynwood Beasley, 1st Lieut., Monticello, Ark., 35th Infantry Division, Camp J. T. Robinson, Ark.
- JORDAN, Ralph Ensign, 1st Lieut., Beloit, Kan., Air Corps Station (nonflying status), Moffett Field, Calif.
- KAYLOR, Coy (Lifton), 1st Lieut., Fargo, N. D., Air Corps Station (nonflying status), McChord Field, Tacoma, Wash.
- KEELER, James Edward, 1st Lieut., Kansas City, Mo., Air Corps Station (nonflying status), Fort Douglas, Utah.
- KEELEY, James Kenneth, 1st Lieut., Rochester, Minn., Air Corps Station (nonflying status), Fort Douglas, Utah.
- KELSEY, Mavis Parrott, 1st Lieut., Rochester, Minn., Air Base, nonflying status, Portland, Ore.
- KIESAU, Kenneth Rudolph, 1st Lieut., Waukon, Iowa, Engineer Replacement Training Center Infirmary, Fort Leonard Wood, Mo.
- KILLINS, Jack Adrian, 1st Lieut., Rochester, Minn., Air Base, nonflying status, Portland, Ore.
- KIRCHER, Theodor Englemann, Jr., 1st Lieut., Brentwood, Mo., Corps Area Service Command Station Hospital, Fort Leonard Wood, Mo.
- KOEHN, Frederick Dec., 1st Lieut., Oakland, Iowa, Air Corps Station (nonflying status), McChord Field, Tacoma, Wash.
- LAWSON, Mason Glenn, 1st Lieut., Texarkana, Ark., 2d Cavalry Division, Fort Riley, Kan.
- LEWIS, Leland Stanford, 1st Lieut., Garrison, Iowa, Air Base (nonflying status), Boise, Ida.
- LINDAHL, Wallace William, 1st Lieut., Rochester, Minn., Advanced Flying School (nonflying status), Mather Field, Calif.
- LONGWELL, Freeman Harris, 1st Lieut., Iowa City, 6th Engineer Battalion, Fort Leonard Wood, Mo.
- LYMAN, Richard Watson, 1st Lieut., Rochester, Minn., Air Corps Station (nonflying status), Fort Douglas, Utah.
- MAGUIRE, Frank Carroll, Jr., 1st Lieut., Bluffs, Ark., 2d Cavalry Division, Fort Riley, Kan.
- MAXWELL, Reuben Jordan, 1st Lieut., St. Louis, Air Base, nonflying status, Portland, Ore.
- MAXWELL, Robert Hudson, 1st Lieut., Wichita, Kan., Basic Flying School (nonflying status), Taft, Calif.
- MCCURDY, Robert George, 1st Lieut., Bismarck, N. D., Basic Flying School (nonflying status), Taft, Calif.
- McFLINNNEY, William Thomas, 1st Lieut., Iowa City, Air Base, nonflying status, Portland, Ore.
- MEITON, Thomas Jure, Jr., 1st Lieut., Fort Smith, Ark., 2d Cavalry Division, Fort Riley, Kan.
- MILDER, Benjamin, 1st Lieut., University City, Mo., Air Corps Station (nonflying status), Moffett Field, Calif.
- MODELEVSKY, Aaron Captain, Joplin, Ark., 2d Cavalry Division, Fort Riley, Kan.
- MOOS, David James, 1st Lieut., Minneapolis, Air Corps Station (nonflying status), Fort Douglas, Utah.
- MOULTON, Everett Crockett, Jr., 1st Lieut., Evansville, Ill., 4th Cavalry, Fort Meade, S. D.
- MULMED, Earl I., 1st Lieut., Rochester, Minn., Air Corps Station (nonflying status), Fort Douglas, Utah.
- NEMEYER, Arnold Carl, 1st Lieut., Omaha, Corps Area Service Command, Replacement Center Infirmary, Fort I. E. Warren, Wyo.
- NOLAN, Bernard Patrick, 1st Lieut., Pine Ridge, S. D., 2d Cavalry Division, Fort Riley, Kan.
- NORD, Donald Harold, 1st Lieut., Huxley, Iowa, Air Base (nonflying status), Pendleton, Ore.
- PEARSON, Clarence Coplyn, Captain, Rochester, Minn., Air Corps Station (nonflying status), Fort Douglas, Utah.
- PEGGS, Harold Jared, 1st Lieut., Des Moines, Iowa, Air Base (nonflying status), Fresno, Calif.
- PETERS, Claude Frederick, 1st Lieut., Benton, Ark., 2d Cavalry Division, Fort Riley, Kan.
- PETERS, Gustavus Alfred, 1st Lieut., Rochester, Minn., Air Base, nonflying status, Portland, Ore.
- PRESSMAN, Abraham, 1st Lieut., Belcourt, N. D., 2d Cavalry Division, Fort Riley, Kan.
- PROTHRO, Winston Boone, 1st Lieut., Arkadelphia, Ark., 2d Cavalry Division, Fort Riley, Kan.
- PULLIAM, Robert Lee, Jr., 1st Lieut., Iowa City, Air Base, nonflying status, Portland, Ore.
- RANDALL, Ross George, 1st Lieut., Iowa City, Air Base, nonflying status, Everett, Wash.
- RICHARDSON, Robert Joseph, 1st Lieut., Rushford, Minn., 6th Medical Battalion, Fort Leonard Wood, Mo.
- ROBINSON, Leo Davis, 1st Lieut., Iola, Kan., Air Corps Station (nonflying status), McChord Field, Tacoma, Wash.
- ROBINSON, Robert Roy, Jr., 1st Lieut., St. Louis, Air Base, nonflying status, Everett, Wash.
- ROSENBAUM, Edward E., 1st Lieut., Rochester, Minn., Corps Area Service Command Station Hospital, Fort Snelling, Minn.
- SAXVIK, Russell Oliver, 1st Lieut., Bismarck, N. D., Air Corps Station (nonflying status), McChord Field, Tacoma, Wash.
- SCHILLA, Fredrick William, Jr., 1st Lieut., St. Paul, Camp Grant, Ill.
- SCUKA, Clayton Leon, 1st Lieut., Wichita, Kan., 6th Medical Battalion, Fort Leonard Wood, Mo.
- SELLS, Robert Lee, Jr., 1st Lieut., Iowa City, Air Corps Station, nonflying status, Moffett Field, Calif.
- SERERES, Edgar Paul, 1st Lieut., Hawatha, Kan., Corps Area Service Command Reception Center, Fort Leavenworth, Kan.
- SEVERIN, Matthew Joseph, Major, Omaha, 14th Medical Regiment, Camp Bowie, Brownwood, Texas.
- SEXTON, Thomas Scott, 1st Lieut., Rochester, Minn., Ogden Air Depot (nonflying status), Ogden, Utah.
- SHAMBERG, Alfred Harold, 1st Lieut., Omaha, 53d Field Artillery Battalion, Fort Leonard Wood, Mo.
- SHANER, John Frederick, 1st Lieut., St. Louis, Air Base, nonflying status, Everett, Wash.
- SHANKLIN, John Harold, 1st Lieut., Kansas City, Kan., Cavalry Replacement Center Infirmary, Fort Riley, Kan.
- SHAPIRO, Jesse, 1st Lieut., St. Paul, Corps Area Service Command Station Hospital, Camp J. T. Robinson, Ark.
- SHULLER, Thurman, 1st Lieut., Ozark, Ark., nonflying status, Moffett Field, Calif.
- SIENKNECHT, Elmer Charles, Jr., 1st Lieut., Kansas City, Mo., Camp Grant, Ill.
- SIMONS, Stanley John, 1st Lieut., Akeley, Minn., Air Base (nonflying status), Pendleton, Ore.
- SIMPSON, Fredrie Elmer, 1st Lieut., Iowa City, Iowa, Camp Grant, Ill.
- SMEAD, Howard H., 1st Lieut., Newton, Iowa, Camp Grant, Ill.
- SOERENSON, Philip Woodrow, 1st Lieut., Minneapolis, Air Corps Station (nonflying status), McChord Field, Tacoma, Wash.
- SPEAKS, Charles A., 1st Lieut., Billings, Mo., Air Base (nonflying status), Pendleton, Ore.
- SPOENEMAN, Marlin Carl, 1st Lieut., Normandy, Mo., Field Artillery, 2d Cavalry Division, Fort Riley, Kan.
- STAGGS, William Andrew, 1st Lieut., Iowa City, Corps Area Service Command, Station Hospital, Camp Joseph T. Robinson, Ark.
- STANDEVEN, James Wylie, 1st Lieut., Oakland, Iowa, Camp Grant, Ill.
- STEPHENS, LeRoy Jules, Captain, St. Louis, Camp Grant, Ill.
- STEPMAN, Theodore Roosevelt, 1st Lieut., St. Louis, Camp Grant, Ill.
- STICKLER, Ralph O., 1st Lieut., Kirksville, Mo., 43d Engineers, Camp J. T. Robinson, Ark.
- STRUB, Giles Joseph, 1st Lieut., St. Louis, Camp Grant, Ill.
- SULLIVAN, William Joseph, Captain, Kirksville, Mo., 2d Cavalry Division, Fort Riley, Kan.
- SUTTER, Richard Anthony, Captain, St. Louis, 87th Quartermaster Battalion, Fort Leonard Wood, Mo.
- SWAN, Kenneth Carl, 1st Lieut., Iowa City, Corps Area Service Command Station Hospital, Fort Riley, Kan.
- SWANN, Clair Leo, 1st Lieut., Leavenworth, Kan., Air Base (nonflying status), Pendleton, Ore.
- TAYLOR, Wendell William, 1st Lieut., Irton, Iowa, Camp Grant, Ill.
- TEISBERG, John Edwin, 1st Lieut., Middle River, Minn., Air Base (nonflying status), Pendleton, Ore.
- THOMPSON, Albert Wendell, 1st Lieut., Bentonville, Ark., 2d Cavalry Division, Fort Riley, Kan.
- THURLOW, Ralph Moody, Captain, Kansas City, Mo., 64th Medical Battalion, Camp Bowie, Brownwood, Texas.
- TINNEY, Malcolm James, 1st Lieut., St. Louis, Air Base, nonflying status, Everett, Wash.
- TROWBRIDGE, Edw. North Haven, Jr., 1st Lieut., Kansas City, Mo., Corps Area Service Command, Station Hospital, Fort Leonard Wood, Mo.
- TVERSKY, Edgar Louis, 1st Lieut., St. Louis, Air Corps Station (nonflying status), Mather Field, Calif.

TYRRELL, Thomas Carroll, 1st Lieut., St. Louis, Corps Area Service Command Station Surgeon's Office, Fort Leonard Wood, Mo
VAN DEVENTER, Roy William, Major, Wellington, Kan, Corps Area Service Command Station Hospital, Fort F. E. Warren, Wyo
VAN VALKENBURG, John Donald, 1st Lieut., Floodwood, Minn., Air Base (nonflying status), Pendleton, Ore
VINES, Robert William, 1st Lieut., Rochester, Minn., Air Corps Station (nonflying status), Fort Douglas, Utah
VON KAENEL, Joseph Edward, 1st Lieut., St. Louis, Air Base, nonflying status, Everett, Wash
WALL, David Roy, 1st Lieut., Wichita, Kan., Corps Area Service Command, Induction Station, Fort Leavenworth, Kan.
WALL, Walton B., Jr., 1st Lieut., Fayetteville, Ark., Camp Grant, Ill
WATERBURY, Charles Arthur, Jr., 1st Lieut., Waterloo, Iowa, Camp Grant, Ill
WAYLAN, Thornton Lewis, 1st Lieut., Nashville, Kan., Air Base (nonflying status), Pendleton, Ore
WEISEL, Wilson, 1st Lieut., Rochester, Minn., Air Base, nonflying status, Everett, Wash

Orders Revoked

ALLIBAND, George Thomas, 1st Lieut., Omaha, Air Corps Station (nonflying status), Fort Douglas, Utah
BOYD, Eugene Judd, 1st Lieut., Iowa City, Fort Riley, Kan
COHN, Mortimer Monty, 1st Lieut., Cheyenne Agency, S. D., Air Base (nonflying status), Fresno, Calif
HAMILTON, Eugene H., 1st Lieut., Hannibal, Mo., Air Corps Station (nonflying status), Fort George Wright, Spokane, Wash
HILL, John Roger, 1st Lieut., Rochester, Minn., Air Corps Gunnery School (nonflying status), Las Vegas, Nev

Relieved from Active Duty

AHERN, Gerald Steber, 1st Lieut., Minneapolis, Fort Snelling, Minn
AIRENS, John Heideman, 1st Lieut., University City, Mo., Jefferson Barracks, Mo
BARRY, William Burnett, 1st Lieut., Kansas City, Mo., Fort Leavenworth, Kan
BOURNE, Melvin Goodwin, 1st Lieut., Algona, Iowa, Fort Des Moines, Iowa
BUSSABARGER, Robert Allison, 1st Lieut., Wardell, Mo., Camp J. T. Robinson, Ark
CIMFEL, Adolph Bohumil, 1st Lieut., Scotia, Neb., Corps Area Service Command Replacement Center Infirmary, Fort Leonard Wood, Mo
CLARK, Richardson Evans, 1st Lieut., Manchester, Iowa, Corps Area Service Command, Station Hospital, Fort Leonard Wood, Mo
EVANS, Byron Henry, 1st Lieut., Cedar Rapids, Iowa, Fort Des Moines, Iowa
GLASSMAN, Arthur Leonard, 1st Lieut., Iowa City
GOLDWASSER, Herbert Valentine, Captain, St. Louis, Camp J. T. Robinson, Ark
HAMILTON, Charles Ferrill, 1st Lieut., Iowa City, Fort Des Moines, Iowa
HAMILTON, Ralph Block, 1st Lieut., West Memphis, Ark., Camp J. T. Robinson, Ark
HARRIS, Charles Preston, 1st Lieut., Leachville, Ark
HAYEL, Harold William, 1st Lieut., Jordan, Minn., Field Artillery, 2d Cavalry Division, Fort Riley, Kan
HAZLET, Kenneth Kirk, 1st Lieut., Iowa City, Fort Des Moines, Iowa
HOFFMAN, Richard Frederick, 1st Lieut., Warren, Ark., Camp J. T. Robinson, Ark
HUBER, Ervin Theodore, Captain, St. Louis, Corps Area Service Command, Replacement Center Infirmary, Jefferson Barracks, Mo
HURST, Thomas Charles, 1st Lieut., Kansas City, Mo., Fort Leavenworth, Kan
KELSEY, Kenneth Lawrence, 1st Lieut., Aurora, Mo., Corps Area Service Command Station Hospital, Fort Meade, S. D.
KEYOYER, William Ray, 1st Lieut., Hugoton, Kan., Fort Riley, Kan
KYGER, Edgar Ross, Jr., 1st Lieut., Kansas City, Mo., Field Artillery, 2d Cavalry Division, Fort Riley, Kan
LOVE, William Robert, 1st Lieut., Rochester, Minn., Corps Area Service Command Station Hospital, Fort Snelling, Minn
McDONALD, William Charles, 1st Lieut., St. Louis, Jefferson Barracks, Mo
MARKING, George Henry, 1st Lieut., Osseo, Minn., Fort Snelling, Minn
McCAIN, Donovan Legare, 1st Lieut., St. Paul, Fort Snelling, Minn
MOEN, Berwyn Harold, 1st Lieut., Inwood, Iowa, Fort Omaha, Neb
MUNSCH, Girard Augustus, 1st Lieut., St. Louis, Jefferson Barracks, Mo

WEISMAN, Rodger Elmer, 1st Lieut., Rochester, Minn., Air Corps Station, nonflying status, Moffett Field, Calif
WIESELER, Rudolph John, 1st Lieut., Avoca, Iowa, Air Corps Station (nonflying status), McChord Field, Tacoma, Wash
WIG, Laurence Maxon, 1st Lieut., Rochester, Minn., Air Corps Station, nonflying status, Moffett Field, Calif
WILLUMSEN, Henry Christian, 1st Lieut., Iowa City, Air Corps Station, nonflying status, Moffett Field, Calif
WISE, Ralph Waldo Emerson, 1st Lieut., Rochester, Minn., Air Corps Station (nonflying status), Fort Douglas, Utah
WOLFE, Otis Decker, 1st Lieut., Marshalltown, Iowa, Corps Area Service Command Station Hospital, Fort Riley, Kan
WORD, Harlan Lamar, 1st Lieut., St. Paul, Corps Area Service Command Station Hospital, Fort Leonard Wood, Mo
WOZENCRAFT, Jean Paul, 1st Lieut., Rochester, Minn., Air Corps Station, nonflying status, Moffett Field, Calif
YOSKIT, Harry, Captain, Festus, Mo., Medical Replacement Center, Camp Grant, Ill

HONICH, Nicholas Joseph, 1st Lieut., O'Fallon, Mo., Air Base (nonflying status), Boise, Idaho
JANUARY, Lewis Edward, 1st Lieut., Iowa City, F. E. Warren, Wyo
LINDAHL, Wallace William, 1st Lieut., Rochester, Minn., Advanced Flying School (nonflying status), Mather Field, Calif
NORD, Don Harold, 1st Lieut., Huxley, Iowa, Air Base (nonflying status), Pendleton, Ore

OLSON, Alton Curtis, 1st Lieut., Minneapolis
OLSON, Duane Charles, 1st Lieut., Gaylord, Minn., Fort Snelling, Minn
PETERS, Gustavus Alfred, 1st Lieut., Rochester, Minn., Air Base (nonflying status), Portland, Ore
POHLMAN, John Francis, 1st Lieut., Wichita, Kan., Fort Leavenworth, Kan
PORTUONDO, Buenaventura Charles, Captain, St. Louis, Corps Area Service Command Station Hospital, Camp Joseph T. Robinson, Ark
PRACHAR, Gordon Allen, 1st Lieut., Madison, Neb
QUATTLEBAUM, Frank Walter, 1st Lieut., Crookston, Minn., Fort Snelling, Minn
RANKER, Clarence Andrew, 1st Lieut., Powell, Wyo., Corps Area Service Command Induction Station, Jefferson Barracks, Mo
REEVES, Eugene Albert, 1st Lieut., Kansas City, Kan., Fort Leavenworth, Kan
REID, Joe Winston, 1st Lieut., Philadelphia, Ark., Camp J. T. Robinson, Ark
ROBINSON, Robert Roy, Jr., 1st Lieut., St. Louis
ROGERS, Charles Wesley, 1st Lieut., Heron Lake, Minn., Corps Area Service Command Engineer Replacement Center Infirmary, Fort Leonard Wood, Mo
SCALES, James Russell, 1st Lieut., Rochester, Minn., Fort Snelling, Minn
SEAMAN, Charles LeRoy, 1st Lieut., Mount Airy, Iowa, 4th Cavalry, Fort Meade, S. D.
STEINLE, George Henry, Captain, Burlington, Iowa, Camp J. T. Robinson, Ark
THROCKMORTON, James Frederick, 1st Lieut., Des Moines, Iowa, Corps Area Service Command Station Hospital, Fort Riley, Kan
VINS, Robert William, 1st Lieut., Rochester, Minn
VON KAENEL, Joseph Edward, 1st Lieut., St. Louis, Air Base (nonflying status), Everett, Wash
VOUCH, Orrie Alexander, Jr., 1st Lieut., Iowa City, Fort Des Moines, Iowa
WALL, Walton B., Jr., 1st Lieut., Fayetteville, Ark., Camp J. T. Robinson, Ark
WATERBURY, Charles Arthur, Jr., 1st Lieut., Waterloo, Iowa, Fort Des Moines, Iowa
WEISEL, Wilson, 1st Lieut., Rochester, Minn
WELLS, Aubrey Hanson, 1st Lieut., Bloomville, Mo., Fort Leonard Wood, Mo
WIG, Laurence Maxon, 1st Lieut., Rochester, Minn
WOLPERT, Paul Louis, 1st Lieut., Onawa, Iowa, Corps Area Service Command Replacement Center Infirmary, Fort Leonard Wood, Mo
WORTHEN, Sam Henry, 1st Lieut., Afton, Wyo., Corps Area Service Command Station Hospital, Fort Snelling, Minn

WAR DEPARTMENT

The following additional medical reserve officers have been ordered to extended active duty by the War Department, Washington, D. C.

ANSELROD, Bernard, 1st Lieut., Los Angeles
BEARD, Donald Edwin, 1st Lieut., San Francisco, Ga
BELL, Nelson Clark, 1st Lieut., San Francisco
BONDIKANT, Herbert William, Jr., 1st Lieut., Chevy Chase, Md
BROWN, Louis Emmitt, Jr., 1st Lieut., Akron, Ohio
BUCKLEY, John P., 1st Lieut., Fresno, Calif
CANNON, Edward Riley, 1st Lieut., Oneida, N. Y.
CRAMPTON, Alexander B., 1st Lieut., Baltimore
GEIB, Wayne Allen, 1st Lieut., Philadelphia
HULETT, Albert Groves, Lieut. Col., East Orange, N. J.
JACOBSON, Richard William, 1st Lieut., Seattle
McNEILL, Arthur Edison, 1st Lieut., Hanover, N. H.
MARTIN, Walter Patrick, 1st Lieut., Los Angeles

MARTINI, Arthur Peter, 1st Lieut., St. Louis
McCREIGHT, David Wade, 1st Lieut., Marlboro, N. J.
MOUNCE, Darrell D., 1st Lieut., Los Angeles
NOVAK, Joseph Francis, 1st Lieut., Pittsburgh
O'BRIEN, John Patrick, Captain, Rochester, Minn
PADGET, Paul, 1st Lieut., Baltimore
PEARMAN, Robert Oliver, Captain, Rochester, Minn
ROSE, Frederick A., 1st Lieut., Cleveland
STEWART, Joseph Spencer, Major, Miami, Fla
STONE, Ralph Enck, 1st Lieut., Connelville, Pa
SULLIVAN, John C., 1st Lieut., Washington, D. C.
TAFFANT, Edward James, 1st Lieut., Philadelphia
WAINWRIGHT, Talcott, Captain, Moscow, Pa
WILKS, Frank Wallace, 1st Lieut., Los Angeles
WILLIAMS, Glenn LeRoy, Captain, Philadelphia
WILSON, James E., 1st Lieut., Clarksville, W. Va.
WOIYN, Irving, 1st Lieut., Chicago

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARKANSAS

Tri-State Meeting.—The Tri-State Medical Society (Louisiana, Texas and Arkansas) will meet in El Dorado, September 23-24, under the presidency of Dr. Rufus B. Robins, Camden, whose official address will be entitled "The Human Element in Medicine." Among other speakers will be:

- Dr. Guy A. Caldwell, New Orleans, Measures for Prevention in Treatment of Gas Gangrene.
- Dr. Alfred I. Folsom, Dallas, Texas, Minor Urologic Procedures of Interest to General Practitioners.
- Dr. James S. Speed, Memphis, Tenn., Treatment of Ununited Fractures of the Neck of the Femur.
- Dr. Herbert Fay H. Jones, Little Rock, The Female Urethra.
- Dr. Marcus Pinson Neal, Columbia, Mo., Pernicious Anemia.
- Dr. William B. Carrell, Dallas, Primary Bone Tumors: Clinical Diagnostic Study.
- Dr. Charles T. Stone, Galveston, Newer Aspects of Pneumonia.
- Dr. Oliver C. Nelson, Little Rock, Treatment of Hypertension.
- Dr. Walter G. Stuck, San Antonio, Recent Developments in Compound Fracture Treatment.
- Dr. Wallace Marshall, Appleton, Wis., Newer Therapy for Acne Vulgaris.

Medical, urologic, orthopedic and clinical pathologic conferences will also form a part of the program.

CALIFORNIA

Study of Trichinosis.—A study of 275 cases of human trichinosis reported to the San Francisco Department of Health from 1929 up to August 1 of this year revealed that 61 cases were attributed to contaminated pork sausage. Next in order was salami, accounting for 54 cases, fresh pork 40, Mettwurst 30, ground pork and meat loaf 11, raw pork 6, pork chops or steaks 6, ham 4, home cured salami 3 and raw pork sausage 1; in 7 cases the food causing the trichinosis was bear meat. Many of the 30 cases reported in 1934 were traced to salami, and in that year the city department of health instituted rigid control measures for the preparation and sale of this food. Since then no cases of trichinosis attributed to local commercially prepared salami have been reported. In contrast to the 184 cases recorded for the six years preceding 1935, during the second half of the twelve year period 31 cases were noted in 1935, 18 in 1936, 9 in 1937, 19 in 1938, 3 in 1939, 8 in 1940 and 4 to August 1 of the present year. The health department points out that the survey demonstrated some of the difficulties involved in obtaining specimens of food for laboratory analysis when trichinosis is suspected. Of the 275 cases reported for the entire period, laboratory examination of the food involved was obtained in only 22 cases. In many cases diagnosis was made by clinical findings and examination of the patient's blood for further confirmation.

COLORADO

State Medical Meeting in Estes Park.—The seventy-first annual session of the Colorado State Medical Society will be held at the Stanley Hotel, Estes Park, September 17-20. The guest speakers will be:

- Dr. Edwin Davis, Omaha, Factors Tending to Minimize the Prostatectomy Hazard; Chemical Carcinogenesis, Drugs, Dyes, Remedies and Cosmetics, with Particular Reference to Bladder Tumors.
- Dr. Herbert E. Coe, Seattle, Atresias of the Alimentary Tract; Relation of Growth and Development to Children's Surgery.
- Dr. Robert A. Bier, Major, M. R. C., U. S. Army, Washington, D. C., The Physician in National Defense.
- Dr. Louis E. Viko, Salt Lake City, Evaluation of Chest Pain.
- Chauncey D. Leake, Ph.D., San Francisco, Recent Advances in Pharmacology; Pharmacology of Vitamins and Endocrines.
- Dr. William F. Riechhoff Jr., Baltimore, Present Status of the Treatment of Malignant Tumors of the Lung; Surgical Treatment of Peptic Ulcer.
- Dr. Elmer L. Seeringhaus, Madison, Wis., Pituitary Therapy in General Practice; Treatment of the Menopause.
- Dr. Donald H. Slaughter, Dallas, Texas, Use of Morphine-Prostigmine Analgesia in Obstetrics.

Dr. Guy C. Cary, Grand Junction, the incoming president, will deliver his address Thursday afternoon. Friday afternoon there will be a panel discussion on "Differential Diagnosis and Management of Acute Swellings About the Face and Neck." Dr. Theodore E. Beyer, Denver, will be the leader and Dr. Frederic O. Kettelkamp, Colorado Springs, the collaborator. There will be round table luncheons throughout the session

conducted by the guest speakers. The annual stag dinner will be held Friday evening; the name of the guest at this session has not yet been announced. In addition Dr. Slaughter will discuss "Pseudomedicine." Robert L. Stearns, LL.D., president of the University of Colorado, Boulder, will be the guest speaker at the annual banquet Saturday evening. His subject will be "A Pattern for Public Education."

DELAWARE

Personal.—Richard W. Linton, Ph.D., assistant professor of pathology, Cornell University Medical College, New York, has joined the staff of the Biochemical Research Foundation, Newark. Dr. Linton taught bacteriology at Columbia University from 1926 to 1931 and later was officer in charge of cholera inquiry, Indian Research Fund Association, All-India Institute of Hygiene and Public Health, Calcutta.

DISTRICT OF COLUMBIA

Annual Scientific Assembly.—The Medical Society of the District of Columbia will hold its 1941 scientific assembly at the Mayflower Hotel, Washington, September 30-October 1-2. The speakers will include:

- Dr. Isaac Alexander Bigger, Richmond, Va., Intrathoracic Injuries.
- Dr. Walter E. Dandy, Baltimore, Injuries of the Head.
- Dr. Soma Weiss, Boston, Preeclamptic and Eclamptic Toxemia in Pregnancy.
- Dr. Thomas Fitz-Hugh Jr., Philadelphia, Differentiation of Anemias.
- Dr. Harvey B. Stone, Baltimore, Diagnosis of Rectal Diseases.
- Dr. Oscar B. Hunter, Washington, Newer Laboratory Procedures in the Diagnosis of Obscure Fevers.
- Dr. Harold T. Hymann, New York, Massive Dose Chemotherapy of Early Syphilis by the Intravenous Drip Method: Five Day Treatment.
- Dr. Eli K. Marshall Jr., Baltimore, Sulfamylguanidine as a Chemotherapeutic Agent for Intestinal Infections.
- Dr. William G. Lennox, Boston, Epilepsy and Migraine: Practical Points in Diagnosis and Treatment.
- Dr. Wendell S. Muncie, Baltimore, Why Are There So Many Neurotics?
- Dr. Joseph C. Yaskau, Philadelphia, Practical Treatment of the Common Neuroses.
- Dr. Warren F. Draper, assistant surgeon general, U. S. Public Health Service, Washington, Public Health and National Defense.
- Rear Admiral Ross T. McIntire, surgeon general, U. S. Navy, Washington, Aviation Medicine in the Navy.
- Major Gen. James C. Magee, surgeon general, U. S. Army, Washington, Care and Evacuation of Battle Casualties in Modern War.
- Lieut. Comdr. Lloyd R. Newhouse, M. C., U. S. Navy, Washington, Use of Blood Substitutes by the Armed Forces.
- Col. Leonard G. Rowntree, chief, medical division, Selective Service System, Washington, Health of the Nation as Revealed by Selective Service.

GEORGIA

Memorial to Dr. Roberts.—The Fulton County Medical Society, Atlanta, plans to establish a memorial in its new building now under construction to Dr. Stewart R. Roberts, Atlanta, who died on April 14. Dr. Roberts was one of the original committee named to develop plans for the society's new home and once served as the society's president. He was a member of the House of Delegates of the American Medical Association from 1916 to 1920 and at the time of his death was professor of clinical medicine at Emory University School of Medicine, Atlanta. The county medical society will accept contributions from any one wishing to participate in the memorial.

ILLINOIS

Campaign Against Venereal Disease.—The state department of health has agreed to act as co-sponsor in a WPA drive against venereal diseases originally intended for the Chicago area, newspapers announced. The agreement was reached at a conference in Springfield, July 2, attended, among others, by Dr. Roland R. Cross, state health officer, Governor Green, Dr. Oliver C. Wenger, U. S. Public Health Service, representing the health commissioner of Chicago, Dr. Herman N. Baudesen, and Dr. Herman M. Soloway, state venereal disease officer. More than \$1,000,000 has been allocated to the Chicago area campaign and it is believed that additional funds will be obtained to extend the drive into downstate communities, it was said. Tentative arrangements call for the establishment of a training center where WPA field workers from both Chicago and downstate will be taught methods of finding sources of infection for both syphilis and gonorrhea. All infected persons found will be asked to submit to modern treatment, which would make them noninfective in a short time. If an infective person refuses to be treated or violates his quarantine, his residence will be placarded. In each case an attempt will be made to learn where the disease was contracted with a view to bringing under control the source of the disease. The project is designed as a national defense

measure to protect both civilians and draftees and to bring under treatment the draftees who are rejected because of syphilis and gonorrhea. In a current case finding program in Chicago, more than 56,000 persons have been found to have syphilis in a total of 1,046,425 persons examined.

Chicago

Lecture on the Cyclotron.—Ernest O. Lawrence, Ph.D., professor of physics at the University of California, Berkeley, and 1939 winner of the Nobel Prize in physics will deliver a public lecture on "The Cyclotron in Medicine," illustrated with lantern slides and experimental demonstrations. The Institute of Medicine of Chicago will sponsor the lecture, which will be presented in the auditorium of the Museum of Science and Industry in Jackson Park, September 25. Dr. Lawrence is the inventor of the cyclotron.

Luncheons for Northwestern Alumni.—The Northwestern University Medical Alumni Association announces three special luncheons to be held during the annual sessions of the Michigan, Indiana and Colorado state medical societies. In Colorado the luncheon will be at the Stanley Hotel in Estes Park, September 19; Michigan, at the Peninsula Club, Grand Rapids, September 18; Indiana in Indianapolis, September 24. A colored movie entitled "Northwestern Marches On" will be a feature of the luncheon meetings.

INDIANA

State Medical Meeting in Indianapolis.—The ninety-second annual session of the Indiana State Medical Association will be held at the Claypool Hotel, Indianapolis, September 23-25, under the presidency of Dr. Albert M. Mitchell, Terre Haute. The following out of state speakers will participate:

- Dr. Louis Hopewell Bauer, Hempstead, N. Y., Aviation Medicine
- Dr. Jerrold Peerman Nesselrod, Evanston, Ill., Rectal and Lower Sigmoid Diseases
- Dr. Richard B. Cattell, Boston, Surgical Diseases of the Large Intestine
- Dr. James P. Leake, U. S. Public Health Service, Bethesda, Md., Poliomyelitis
- Dr. Ralph Pemberton, Philadelphia, Arthritis
- Dr. Russell L. Haden, Cleveland, More Common Blood Dyscrasias Seen by the General Practitioner
- Dr. William Kenneth Jennings, Evanston, Ill., A New Method of Repair for Inguinal Hernia
- Dr. Sanford R. Gifford, Chicago, Relation Between the Eye and the Upper Respiratory Tissues
- Dr. Paul M. Wood, New York, Facts and Fallacies Concerning Modern Anesthesia
- Dr. William D. Province, New York, Chemotherapy
- Dr. Charles Mazer, Philadelphia, Endocrine Treatment in General Practice
- Dr. Clarence D. Selby, Detroit, Industrial Health
- Dr. John J. Moorhead, New York, Essentials in Fracture Treatment
- Dr. Fred M. Smith, Iowa City, Management of the Patient with Coronary Disease

The annual banquet, Wednesday evening, will be addressed by Dr. Fred W. Rankin, Lexington, Ky., President-Elect, American Medical Association, on "The Medical Profession and the Emergency." Michael "Mickey" MacDougall, card detective and author of "Gamblers Don't Gamble," will also speak. Dr. Wood will be guest of honor at a luncheon given by the section on anesthesia Wednesday afternoon. The medical section will hold a panel discussion Wednesday on "The Clinical Application of the Newer Laboratory Procedures as Pertains to the Man in General Practice" with the following speakers: Drs. James O. Ritchey, Indianapolis, chairman; Alfred S. Giordano, South Bend; Etta B. Selsam, Terre Haute; Wemple Dodds, Crawfordsville, and Gordon B. Wilder, Anderson. The woman's auxiliary will meet during the annual session of the state medical society. The conference of Indiana health officers will be held at the State Board of Health Building, Indianapolis, September 22-23. Speakers will include Sr. Surg. Frank V. Meriwether, U. S. Public Health Service, on "Your Responsibility in the National Defense Program."

IOWA

Society News.—At a meeting of the Dallas-Guthrie Counties Medical Society at the State Hospital, Woodward, July 17, speakers included Dr. Clarence M. Porter, Woodward, on "Treatment of Acute Laryngotracheobronchitis."—Dr. Frank R. Peterson, Iowa City, addressed the Buchanan County Medical Society, July 11, on "Malignant and Benign Conditions of the Large Bowel."

New Division of Cancer Control.—The Iowa State Department of Health announces the creation of a new division of cancer control. Dr. Edmund G. Zimmerer, Des Moines, has been made director of the new unit, which will supervise expanded cancer control activities in the state. It will direct

statistical studies and the establishment of a tumor registry and will cooperate with agencies concerned with the control of cancer. Three tumor clinics are already active, and it is planned to provide additional facilities in other parts of the state.

Postgraduate Programs.—The Polk County Medical Society, Des Moines, announces its postgraduate programs for the coming year. September 17, Drs. Fred Z. Havens and Bayard T. Horton, both of Rochester, Minn., will discuss "Plastic Surgery" and "Treatment of Headache" respectively. Members of the society, all of Des Moines, will present the program October 15.

- Dr. Henry G. Decker, Subarachnoid Hemorrhage
- Dr. Howard D. Gray, Significance of Uterine Hemorrhage.
- Dr. John T. Strawn, Gastric Hemorrhage
- Dr. John C. Parsons, Pulmonary Hemorrhage.

Institutes on Industrial Health.—A second series of special institutes on industrial health, sponsored by the Iowa State Department of Health in cooperation with the committee on industrial health and the speakers' bureau of the state medical society, will be held this month. Each institute will be scheduled as a special meeting of the local county medical society, and the officers of each society are making the arrangements. The second series will be in Council Bluffs September 22, Waterloo September 23 and Dubuque September 24. The first series was conducted in various centers in June, and the programs were presented by guest speakers.

MAINE

New Medicolegal Officers.—Dr. William Holt, Portland, was elected president of the Maine Medico-Legal Society at its annual meeting in York Harbor, June 24. Other officers are Albert Knudsen, attorney, Cumberland County, Portland; Dr. Walter S. Stinchfield, Skowhegan, treasurer, and Dr. George L. Pratt, Farmington, secretary.

MINNESOTA

Personal.—Dr. John M. Adams, Minneapolis, clinical assistant professor of pediatrics, University of Minnesota Medical School, Minneapolis, has been appointed to take charge of the outpatient pediatrics department, succeeding Dr. Chester A. Stewart, who resigned to take charge of the department of pediatrics at the Louisiana State University School of Medicine, New Orleans.—Dr. Donald C. Balfour, director of the Mayo Foundation, Rochester, recently received the honorary degree of doctor of science from McMaster University, Hamilton, Ont.

Promotions at University of Minnesota.—The following promotions at the University of Minnesota Medical School, Minneapolis, have been announced:

- Dr. Charles D. Crecy to professor of surgery, chief of the division of urology, and assistant dean of the medical school.
- Dr. James A. Johnson to clinical professor of surgery.
- Dr. Abe B. Baker, associate professor of nervous and mental diseases and of pathology.
- Dr. John R. Paine, associate professor of surgery.
- Dr. Wesley W. Spink, associate professor of medicine.
- Dr. Archibald H. Beard, clinical associate professor of medicine.
- Dr. Edward T. Evans, clinical associate professor of surgery.
- Dr. Royal C. Gray, clinical associate professor of nervous and mental diseases.
- Dr. Nathaniel H. Lufkin, clinical associate professor of pathology.
- Dr. Kenneth A. Phelps, clinical associate professor of otolaryngology.
- Dr. Morse J. Shapiro, clinical associate professor of medicine.
- Dr. Samuel A. Weisman, clinical associate professor of medicine.
- Dr. Lillian Cottrell, assistant professor of nervous and mental diseases.
- Dr. Charles E. McLennan, assistant professor of obstetrics and gynecology.
- Dr. Harold H. Rosenblum, assistant clinical professor of medicine.
- Dr. Henry M. Weyrauch, Jr., assistant clinical professor of urology.
- Dr. Sidney J. Shipman, clinical professor of medicine.

NEW YORK

Typhoid Carrier in Children's Camp.—Four cases of typhoid among 60 children who were at an upstate camp from June 25 to July 15 have been traced to a woman cook in the camp who was a carrier. *Health News* reports that the woman had been declared a carrier in 1939, that she had taken the position as camp cook contrary to regulations forbidding carriers to handle food and drink for public consumption, and that she had left New York City without notifying the local health department of her change of address. At the time of the report she was in the custody of a hospital awaiting action by New York City authorities. All the children in the camp were sent to their homes and are under observation.

District Meetings.—The annual meeting of the First District Branch of the Medical Society of the State of New York will be held at Mount Sinai Hospital, New York, October 8. The program, arranged by Dr. Reuben Ottenberg, New York,

will consist of case presentations, ward rounds, operations, round table discussions and other activities covering all fields of medicine except obstetrics.—The Fifth District Branch meeting will be held at Syracuse, September 23, with the following speakers:

- Dr. Leo E. Gibson, Syracuse, Blood Stream Infection of the Cortex of the Kidney.
Dr. Walter S. McClellan, Saratoga Springs, Facilities, Personnel and Waters as Presented for Treatment at the Saratoga Spa.
Dr. William H. Wehr, Buffalo, New Concepts of the Etiology of Cancer.
Dr. Howard K. Thompson, Boston, Chronic Arthritis from the Standpoint of the Practicing Physician.
Dr. John Scudder, New York, Blood Studies in Shock as a Guide to Therapy.
Dr. Charles F. W. Bove, New York, Modern Care of Civilian and Military Casualties Under Warfare.

New York City

Enrolment of Nursing Students Increases.—The seven schools of nursing owned and operated by the city of New York admitted 373 new students for the fall term, as compared with 254 last year, according to an announcement from the Department of Hospitals. The department is making a special effort to forestall the threat of a shortage of qualified nurses resulting from defense needs. The city schools include Bellevue Hospital with an enrolment of 348; Mills Training School for Men, 68; Cumberland Hospital, 88; Harlem Hospital, 128; Kings County Hospital, 599; Metropolitan Hospital, 176, and Fordham Hospital, which has a new school with a class of 40.

Defects Discovered in Examination of Youths.—The health units of the National Youth Administration for New York City and Long Island examined 13,297 young men and women during the eleven month period ended July 31, according to a recent report. The defects and diseases most frequently found were dental defects in 92.6 per cent, visual defects in 40 per cent, malnutrition in 14.3 per cent and cutaneous lesions in 11.5 per cent. Diseases of the nose and throat occurred in 8.5 per cent, heart disease in 5.5 per cent and high blood pressure in 4 per cent. Those who showed need for remedial treatment were referred to private physicians, private dentists or hospital and dental clinics if they could not afford private care. Arrangements for the work of the NYA health units were made through the cooperation of the New York City Department of Health, the health commissioners of Nassau and Suffolk counties and the Suffolk and Nassau county medical societies.

OHIO

Postgraduate Day.—The Stark County Medical Society will hold its third annual postgraduate day at the Courtland Hotel, Canton, October 8. The following members of the staff of Johns Hopkins University School of Medicine, Baltimore, will present the program: Drs. William F. Rienhoff Jr., associate professor of surgery; Esther L. Richards, associate professor of psychiatry, and Charles W. Wainwright, associate in medicine.

New Health Officers.—Dr. William B. Wild has been appointed health commissioner of the combined Mansfield City-Richland County health district, succeeding the late Dr. Roy C. Rehder; prior to his appointment as assistant to Dr. Rehder last November, Dr. Wild was coroner of Holmes County.—Dr. Albert J. Helm, formerly of Toledo, has been named health commissioner of Madison County, succeeding Dr. Francis R. Neff, Lakewood, who was called to active military service at Fort Wayne, Ind.

Personal.—Dr. Harold H. Brneckner, Fort Wayne, has been appointed superintendent of the Lima District Tuberculosis Hospital, succeeding Dr. Edward W. Laboe, resigned.—Dr. Herman M. Turk has resigned as superintendent of the Lima State Hospital, and Dr. Roy E. Bushong, Columbus, has been appointed to succeed him.—Dr. William M. German, pathologist at the Good Samaritan Hospital, Cincinnati, has returned from a three months stay in Bogotá, Colombia, where he was guest professor of pathology at the National University of Colombia.—Dr. George W. Jacoby Jr., Ashley, has been appointed health director of Wooster College, Wooster.

PENNSYLVANIA

District Meeting.—The annual meeting of the Second Conncilior District of the Medical Society of the State of Pennsylvania was held in Allentown, September 11, with Dr. Richard B. Cattell, Boston, as the guest speaker on "Differential Diagnosis and Management of Surgical Lesions of the Intestines." In addition, a series of brief talks was presented by officers of the state medical society: Drs. Francis F. Borzell,

Philadelphia, president; Lewis T. Buckman, Wilkes-Barre, president-elect; Walter F. Donaldson, Pittsburgh, secretary; Chauncey L. Palmer, Pittsburgh, chairman of the committee on public health legislation, and Frank W. Konzelmann, Philadelphia, chairman of the laboratory committee.

TEXAS

Illegal Practitioner Receives Maximum Fine.—Harry M. Hoxsey, operator of a cancer clinic in Dallas, charged with practicing medicine without a license, was fined \$25,000 and court costs and, in addition, received a five month jail sentence July 11, newspapers reported. The fine was the heaviest on such a charge ever imposed in the Dallas County Criminal Court, which found the defendant guilty on five counts in the complaint. Hoxsey's lawyers have filed motion for a new trial and the defendant is free pending appeal, it was stated.

Medal Awarded to Colonel Craig.—The Scientific Society of San Antonio recently presented the Franklin Medal to Col. Charles F. Craig, U. S. Army, retired, San Antonio, professor of tropical medicine emeritus, Tulane University of Louisiana School of Medicine, New Orleans, for distinguished work in science. Colonel Craig is the first recipient of the medal donated by Colonel and Mrs. W. Lee Hart of San Antonio and named in honor of Mrs. Hart's father, the late Thomas H. Franklin, a fellow of the society. The award was presented at the annual dinner of the society, at which time Colonel Craig gave the principal address. Colonel Craig graduated at Yale University School of Medicine, New Haven, in 1904. He was pathologist and bacteriologist for the army hospitals 1898-1906; assistant curator, Army Medical Museum, and assistant professor of bacteriology and clinical diagnosis, Army Medical School, 1909-1913; commanding officer, department laboratory, central department, U. S. Army, Fort Leavenworth, Kan., 1913-1916, department laboratory number 2, El Paso, Texas, 1916-1917, and army laboratory at Yale, 1917-1918; curator, Army Medical Museum, 1918-1920; professor of bacteriology, parasitology and preventive medicine and director of laboratories, Army Medical School, 1920-1922; medical inspector, Hawaiian Department, U. S. Army, 1922-1925; director, department of preventive medicine and clinical pathology, Army Medical School, 1926-1929; commandant at the school, 1929-1930; assistant commandant, Army Medical Center, Washington, D. C., 1930-1931. He was named professor of tropical medicine and director of the department at Tulane University of Louisiana School of Medicine in 1931 and at the graduate school of medicine in 1935. He became emeritus professor on Sept. 1, 1938. He has received the Distinguished Service Medal.

VIRGINIA

Regional Meeting.—The Fourth District and Southside Virginia Medical Society met in Petersburg, August 5, with the following speakers, among others: Drs. Herbert C. Jones, Petersburg, on "Experience with Accident Work in the Building of Camp Lee"; Douglas G. Chapman, Richmond, "Chronic Heart Failure and Its Management," and Kester S. Freeman, Kenbridge, "Deltoid Bursitis."

State Medical Meeting at Virginia Beach.—The Medical Society of Virginia will hold its annual meeting at the Cavalier Hotel, Virginia Beach, October 6-8, under the presidency of Dr. Walter B. Martin, Norfolk. The speakers at the general sessions will include:

- Comdr. Waddie P. Jackson, M. C., U. S. Naval Reserve, Norfolk, The Airplane, a Possible Means of Transmission of Disease.
Dr. Charles S. White, Washington, D. C., Clinical Consideration of Blood Plasma.
Col. Norman T. Kirk, M. C., U. S. Army, Washington, Some of the Problems of the Medical Department in the Present Emergency.
Dr. James R. Miller, Hartford, Conn., Office Gynecology.
Dr. Henry W. Cave, New York, Medical and Surgical Management of Ulcerative Colitis.
Dr. Randolph H. Hoge, Richmond, Carcinoma of the Cervix.
Drs. Byrd Stuart Leavell and John Osborne McNeel, Charlottesville, Unusual Manifestations of Acute Infectious Mononucleosis.

Dr. Louis Hamman, Baltimore, will be a guest to conduct a clinical pathologic conference. Another feature will be a group of panel discussions on general practice of medicine, surgery in relation to general practice, obstetrics and gynecology and pediatrics. Several special societies will meet during the state society's session, including the Virginia Obstetrical and Gynecological Society, Virginia Radiological Society, Virginia Otolaryngological Society, Virginia Orthopedic Society, Virginia Pediatric Society, alumni of the Medical College of Virginia and the Virginia section of the American College of Physicians.

WASHINGTON

Health Officers Appointed.—Dr. John A. Nelson, Longview, has been appointed health officer of Cowlitz County to succeed Dr. Arthur L. Ringle, Kelso, who resigned to become regional medical director of the Farm Security Administration in Portland, Ore.—Dr. Adam D. Schlotthauer, Newport, has been appointed health officer of Pend Oreille County.—Dr. Wallace W. Schwabland, Seattle, has succeeded Dr. Wallace D. Hunt, Seattle, as health officer of King County, according to *Northwest Medicine*.

GENERAL

Conference on Industrial Health.—The second annual American Conference on Industrial Health will be held at the Chicago Towers, Chicago, November 5-6. There will be symposiums on the technical problems, the economics and the social implications of industrial health. One dinner session will be devoted to industrial health, defense and the private practitioner.

Inter-State Postgraduate Medical Association.—The International Assembly of the Inter-State Postgraduate Medical Association of North America will hold its twenty-sixth annual meeting in the Auditorium, Minneapolis, October 13-17. Dr. Arthur G. Sullivan, Madison, Wis., who has been business manager for the association for many years, has been elected managing director by the board of trustees to succeed the late Dr. William B. Peck, Freeport, Ill.

Plans for Congress on Obstetrics and Gynecology.—Plans for the second American Congress on Obstetrics and Gynecology, to be held in St. Louis, April 6-10, 1942, have been announced. Dr. Everett D. Plass, Iowa City, is chairman and Dr. William F. Mengert, Iowa City, is secretary of the program committee. Activities will include general sessions, meetings of individual and combined sections, round table and panel discussions and meetings for the public. There will be medical, nursing, hospital, public health and educators' sections.

The Poliomyelitis Outbreak.—The number of new cases of poliomyelitis reported in Pennsylvania during the week ended September 6 was less than 50, as compared with 65 and 83 the two preceding weeks. The disease has appeared in forty-five of Pennsylvania's sixty-seven counties. Inductions into military service of registrants from ten counties was suspended during the week. Inductions from York County, where cases were most numerous, had been suspended since August 18. The fourteen state teachers' colleges were ordered to postpone their openings from September 8 until September 22.—Infantile paralysis exists in epidemic form in Prince Georges County, Md., it was reported, with 14 cases between July 1 and September 4. There were 24 cases in the District of Columbia during August.—The state health department of Illinois reported on September 2 that 154 cases had been reported for the year as against 82 for the comparable period of 1940. Eighty-one of this year's cases have been in Cook County, in which Chicago is located.

Plague Infection Spreading Eastward.—A plague control conference was called at Salt Lake City, August 28-29, because of evidence that plague infection among wild rodents of the western part of the United States is spreading eastward and to stimulate rat control programs in urban and rural areas. The conference was attended by health officers from California, Oregon, Washington, Nevada, Montana, Idaho, Wyoming, Utah, Colorado, Arizona, New Mexico and North Dakota. Infection among wild rodents has progressed steadily during the past five years from the Pacific Coast eastward as far as the Dakotas. According to the U. S. Public Health Service, outbreaks of human plague have, in the past, almost invariably been preceded by marked increase in the disease among animals which harbor the infection. Surveys conducted by the public health service in 1935 revealed plague infection among wild rodents in Montana, California and Oregon. In each succeeding year, including 1941, infection has been demonstrated in ground squirrels, chipmunks, rats, marmots and other wild rodents in Arizona, California, Idaho, Montana, Nevada, New Mexico, Utah, Washington and Wyoming. Recently the infection among rodents has been discovered as far east as North Dakota. The first outbreak of human plague in this country occurred in 1900 in San Francisco. Plague in California reached epidemic proportions in 1907-1908. Since 1900 there have been 502 cases and 315 deaths in this country. Two human cases of plague, both in California, have been reported this year.

CANADA

Poliomyelitis and Encephalitis Subside.—The Canadian Press reported on September 6 3 new cases of poliomyelitis and 7 of encephalitis in Manitoba, said to be the lowest spread in months. This year there have been 778 cases of poliomyelitis and 420 of encephalitis. On the same date newspapers reported 1 new case of poliomyelitis and none of encephalitis in Alberta. This province has had 112 cases of poliomyelitis with two deaths and 20 of encephalitis with two deaths since the beginning of the epidemic.

Provincial Meeting.—The annual meeting of the British Columbia Medical Association will be held in Vancouver, September 16-18, under the presidency of Dr. Edward Murray Blair, Vancouver. Guest speakers, some of whom will deliver several papers, will be Drs. Thomas Addis, professor of medicine, Stanford University School of Medicine, San Francisco; Lennox G. Bell, associate professor of medicine, Gordon S. Fahrni, assistant professor of surgery and Frederick G. McGuinness, professor of obstetrics, University of Manitoba Faculty of Medicine, Winnipeg; Louis P. Gambee, associate clinical professor of surgery, University of Oregon Medical School, Portland, and Charles K. P. Henry, associate professor of surgery, McGill University Faculty of Medicine, Montreal. Dr. Thomas C. Routley, Toronto, general secretary of the Canadian Medical Association, will take part in a session on medical economics.

LATIN AMERICA

Inter-American Postgraduate Students.—Dr. Roberto Menezes de Oliveira, Rio de Janeiro, Brazil, recently in charge of the department of radiology and cardiology at the Naval Aviation Hospital in Rio de Janeiro, has received a scholarship to study at the University of Michigan Medical School, Ann Arbor. He is one of thirty-seven students who have received travel grants from the U. S. Department of State to enable them to accept scholarships.—Three students in medical fields have recently spent several months at the Institute of Physiology of the University of Buenos Aires, studying under the direction of Dr. Bernardo A. Houssay, director of the institute. They are Dr. Lewis Dexter of the staff of Peter Bent Brigham Hospital, Boston, who worked on arterial hypertension; Raymond L. Zwemer, Ph.D., assistant professor of anatomy at Columbia University, New York, who studied selective permeability of cells to electrolytes, and John W. Bean, Ph.D., assistant professor of physiology at the University of Michigan, Ann Arbor, who studied zoological specificity of renin and hypertension.

Deaths in Other Countries

Dr. Otfried Foerster, professor of neurology and psychiatry at the University of Breslau, Germany, since 1921, died about June 15, aged 67.

CORRECTIONS

Meeting at Newark Instead of Camden.—In an announcement of the fall meeting of the New Jersey Gastroenterological Society in *THE JOURNAL*, August 30, page 800, the Academy of Medicine of Northern New Jersey should have been located at Newark instead of Camden.

Radiation Protection in Forty-Five Hospitals.—In the next to the last paragraph of the summary of the article by Scheele and Cowie in *THE JOURNAL*, August 23, on page 590, the statement regarding calibrations should have read "Calibrations were too infrequent in many hospitals to permit accuracy in the calculation of doses given to patients."

Government Services

Study of Typhus Vaccine

Drs. Rolla E. Dyer and Norman H. Topping of the U. S. Public Health Service, Washington, D. C., have gone to La Paz, Bolivia, to study the effects of a typhus vaccine developed at the Rocky Mountain laboratory of the service at Hamilton, Mont. A news report pointed out that the test was urgently needed because of the possibility that American troops might have to go into regions of South America where typhus exists and also that the United States may supply Britain with the vaccine. Sufficient vaccine for five thousand persons has been sent to Bolivia, which has the highest typhus rate in the Western Hemisphere, it was said.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 12, 1941

American Nurses Torpedoed

Nine American nurses celebrated Independence Day in a British port. They were the survivors of a party of seventeen coming to set up an American Red Cross Hospital on the former Dutch ship *Maasdam*. One of the boats in which the nurses got away from the ship was damaged and capsized. Those who could swim were told to make for a nearby ship. The others clung to the overturned boat. It is feared that the remaining eight nurses were all drowned. A later report states that ten nurses are safe, but seven and a Red Cross hospital "house mother" are still missing. Four of the rescued nurses drifted for ten days before they were picked up. This is the second occasion on which American nurses have been on a torpedoed ship.

Medicinal Herbs in Wartime

The minister of health has appointed an expert committee to review the present and future requirements of vegetable drugs in the light of empire consumption and trade and facilities for cultivation within the empire, to consider the steps which should be taken to secure organization of cultivation and collection, and to make recommendations. This Vegetable Drugs Committee has now presented an interim report which differentiates two groups of drugs—a long term and a short term group. It is held to be unlikely that any long term policy will materially affect the supply of drugs during the present emergency, as the period preceding production would be too long. A primary essential for a long term policy is an assured market at remunerative prices. This would probably necessitate financial assistance to growers and protective tariffs against supplies from prewar producing countries. The position is quite different for the short term. Supplies can be rapidly created and the producers can recoup themselves during the war. But they may have considerable stocks on hand at the cessation of hostilities when stocks from countries now cut off from trade may come on the market and create serious difficulties. Therefore it is suggested that the government should safeguard the position of those who have undertaken the cultivation of drugs, as is being done in other branches of agriculture. The committee considers that in the United Kingdom attention should be concentrated on the production of agar, dill, belladonna, Irish moss, colchicum, digitalis, ergot, male fern, liquorice root, hyoscyamus, peppermint, psyllium, sphagnum moss, stramonium, dandelion root and valerian. Arrangements have been made by the Ministry of Health to extend the areas of cultivation of certain extremely important drugs. The Royal Botanic Gardens have arranged with the National Federation of Women's Institutes to organize the collection of ten important herbs in each county, making a total of thirty herbs throughout the country. It is hoped to avoid the disappointment of the last war, when incorrect methods of collection and inadequate preparation for the market wasted much effort.

Bill to End the Trade in Secret Remedies

The trade in secret remedies has long been a scandal. Their sale is promoted by preposterous claims often in the form of glaring advertisement, to cure all the common diseases even those which are incurable. The unscrupulous vendors prey on the fears of the uneducated and the credulous. Only a short time ago did the law prohibit the advertisement of remedies

for cancer and venereal disease. The government has now introduced a bill, which has received a second reading in the House of Commons, extending the prohibition to remedies for Bright's disease, cataract, diabetes, epilepsy or fits, glaucoma, locomotor ataxia, paralysis and tuberculosis. These diseases have been selected because, like venereal disease and cancer, they are all of a serious nature and are susceptible of alleviation, if not cure, by recognized methods of treatment and because it is dangerous to delay seeking treatment by resorting to quick remedies. The bill also puts an end to secret remedies by providing that medicines, except those made up for and supplied to a particular person on a prescription, shall bear on the wrapper or on the label a statement of their composition or active constituents. The bill also repeals the medicine stamp duties which were collected by requiring every secret remedy to bear a stamp, which had the unfortunate effect of inspiring ignorant persons with confidence in the nostrum, as they regarded the official stamp as a sort of guaranty by the government. The introduction of this bill at a time when the country is engaged in a great war is one more example of the calmness with which it faces the issue. What a contrast to the hysterical rage manifested in the preposterous fictions of enemy propaganda!

Miniature Radiography and Sputum Examination of Recruits

Miniature radiography has been adopted in the recruitment of men for the navy and air force, but lack of apparatus and of sufficient expert examiners and the fact that this examination would seriously delay the medical examination of the large number of men entering the army has prevented its wider use in Britain. However, Australia has been able to use it for its army. In the *British Medical Journal* of May 10, Major Douglas Galbraith has described the application of miniature radiography for routine chest examination of a large number of recruits. It was found that one in every hundred showed roentgenographic evidence of active or latent tuberculosis and one in every two hundred of active tuberculosis. In the same issue Major Reginald Webster has an article on "Bacteriological Examination Supplementing the Radiological Survey of the Australian Imperial Forces." He not only examined the sputum when this was available, for acid fast bacilli but took cultures of every negative sputum and examined microscopically and by culture the gastric mucus from all in whom lung sputum could not be obtained. The number of men rejected or deferred by reason of x-ray evidence of tuberculosis in whom bacteriological examination was undertaken was 271. Of these, 100 were shown to be actively discharging bacilli. In a group of 152 men with the roentgenogram regarded as indicating active pulmonary tuberculosis, 83 (54.6 per cent) positive bacteriological findings were obtained. In 90 men designated as showing the lesions of old healed tuberculosis or inactive or doubtful tuberculosis the percentage of positives was 11.1. In a third group of 3 men with no sign of a tuberculous lesion in the lungs who were sent for examination on other grounds, sputum or gastric culture proved positive in all. It is noteworthy that these researches were carried out on a section of the Australian population which had been found fit for military duty by a thorough clinical examination.

National Wheatmeal

In a letter in *THE JOURNAL*, May 10, page 2209, the ordering by the government of the production of standard flour of 85 per cent extraction from the wheat berry was reported. The object was to avoid the loss of nutritive ingredients which takes place in the 73 per cent extraction of white flour. The Ministry of Health has issued a circular to local authorities and hospital boards calling attention to the desirability of nutritional grounds of making available to patients and staffs of hospitals and institu-

tutions bread made from the national wheatmeal flour. It is pointed out that this flour contains the greater part of the germ of wheat, with some of the finer bran, but excludes the coarser. It thus contains not only most of the vitamin B₁ but also most of the remainder of the vitamin B complex, as well as valuable mineral elements, which are removed in the production of white flour. National wheatmeal flour is therefore of high nutritional value and is particularly valuable at times when there is restriction on the availability of other foods from which these vitamins and minerals could be obtained. Owing to the exclusion of the coarser bran, bread made from this flour should be readily tolerated by patients with digestive complaints who do not easily tolerate bread made from coarser brown or whole-meal flours.

BUDAPEST

(From Our Regular Correspondent)

July 14, 1941.

Allaying Pain on the Battlefield

Dr. Lippay-Almássy Artur, surgeon colonel in the Hungarian army, in a recent lecture emphasized that many soldiers at the moment of getting wounded, in the fervor of the fight, do not feel anything besides a small bruise. Their attention to their plight is called by oozing blood, by a feeling of suffocation or by sudden weakness. Even the laceration of a thick nerve plexus caused by a shot may not always induce pain. Also shock, collapse and unconsciousness are likely to suppress all sensation of pain. In the sanitary equipment of modern armies one finds besides morphine several more up to date anodynes a constituent of which is scopolamine. In the Hungarian army compound solution of ethylmorphine is official, containing ethylmorphine hydrochloride, morphine and scopolamine; there is also a combination of scopolamine, dihydro-oxycodone hydrochloride and ephedrine. In exceptional cases allaying of pain is contraindicated, says Dr. Lippay-Almássy; thus wounded soldiers suffering from shock or from unconsciousness following cerebral concussion should not be given anodynes even prophylactically because this may result in the paralysis of the respiratory center. The anesthetic administered should be of minimal poisoning effect, its chemical composition should not change on long storing, it should be easily conveyable, of small volume, and its preparation before use should be simple and quick. From the surgical point of view, its anesthetic action should be quick, without an intermediate excitatory state, its administration simple, and with the termination of the operation the patient shall wake without excitation. According to Lippay-Almássy, lumbar anesthesia is to be omitted on the recently wounded. Ethyl chloride narcosis is the method of choice both at and behind the front. Narcotizing with ether is simple, efficacious and, according to the latest investigations, can be administered also to gas poisoned soldiers. Its disadvantage is its low ignition, as it ignites at 34.5 C. (94 F.).

The Prognosis and Treatment of Quinine Poisoning

In view of the intensive campaign against malaria in the swamp districts all over the Near East countries of Europe, poisoning with quinine occurs more frequently now than it did formerly. In the literature one finds the description of but few cases in which the lethal issue was solely due to quinine, says Dr. Gyula Balázs. Even in these instances large doses, from 15 to 20 Gm., were taken at one time. But there are records stating that children and sick persons have died from even smaller quantities, from 1 to 2 Gm., administered for pneumonia and abdominal typhus. The question is, says Balázs, what role quinine and what role the sick organism played, the more so as in his practice patients have made a full and quick recovery after taking even 15 to 20 Gm. of quinine. Even the prognosis of visual troubles is good. In most cases in a few

days, but sometimes after several weeks and even months, full visual acuity is likely to return. Out of 115 quinine poisoning cases in his clinic Balázs observed lasting impairment of vision in but 3 cases. In 1 of these the visual field was constricted and in the others there were central scotomas. According to his experience the lesion of the retina depends more on the individual tendency than on the quantity of quinine taken. As regards therapy, the first task is to remove the yet nonabsorbed quinine from the gastrointestinal tract by copious lavage, aperients containing magnesium sulfate and clysmas. One may administer also medicinal carbon. Then collapse and paralysis of the heart and respiration must be combated with caffeine, ephedrine, epinephrine and carbon dioxide inhalations. If there is a high grade psychic excitation or delirium, one of the morphine derivatives may be resorted to. To increase excretion the patient should be ordered to drink much tea. Cutaneous manifestations, pruritus and edema can be influenced by calcium. In visual troubles for the cessation of arterial cramps amyl nitrite inhalation may be tried, also intravenous injections of iodine. The visual disturbances heal almost spontaneously.

The Bee Experimental Station at Budakesz

Dr. Navratil Dezső, lecturer to the Budapest university, late member of parliament, has begun to treat rheumatic cases at the bee experimental station at Budakesz, near the capital. This is the result of two years of experimental study of the therapeutic effect of the bee sting in rheumatic cases. Now the village is crowded with patients from near and far. The station is provided with sixteen bee families, which sting the patients. The bee toxin shows its effect within a relatively short time. There are many patients who were brought here on stretchers and now they are able to walk and even to mount stairs. This bee poison seems harmless and does not act deleteriously either on the heart or on the kidneys. It was also observed that the patients acquire a better facial expression; the cessation of pain may be only one of the causes of this. This favorable action has been observed in a large number of patients. The station is going to employ a biochemist to study the biochemistry of the process going on during the course of treatment.

Lecture Tour of Professor Benedek

The Belgrade, Sophia, Athens and Ankara universities invited Dr. Ladislaus Benedek, professor of neurology at the university of Budapest, to lecture. Benedek has just completed his tour of the Balkan capitals. In Belgrade he lectured on brain tumors in the physiologic institute of the university. In all capitals he lectured on different subjects.

Marriages

JOSEPH DRAKE ANDERSON, Franklin, Tenn., to Miss Anne Elizabeth Woodard of Spring Hill in July.

ROLAND ALFRED JEFFERSON, Milwaukee, to Mrs. Virginia Brooks Ott of Appleton, Wis., July 26.

AMBROSE E. WANAMAKER, Iamburg, Iowa, to Mrs. Annie Parkhurst of Billings, Mont., June 11.

ALOYSIUS J. HAVLIK, Tama, Iowa, to Miss Genevieve Houston of Marshalltown in Dunlap, June 21.

WILLIAM D. YAVORSKY to Miss Mary Virginia Jamesson, both of Cedar Rapids, Iowa, July 4.

SAMUEL PILCHMAN, Ladd, Ill., to Miss Adelyn Sylvia Baker of La Salle in Brooklyn, July 30.

THOMAS HOLT, Warrenton, N. C., to Miss Lela Manning of Bainbridge, Ga., July 19.

HAROLD R. WEIDNER to Miss Lucille V. Rapp, both of Coldwater, Mich., August 6.

HAROLD BERNARD LEVIN to Miss Sylvia Leah Meyer, both of Atlanta, Ga., July 19.

DARRELL A. BERRY, Fallon, Nev., to Miss Ida Wickland, June 20.

Deaths

Ludwig W. Kast * New York, Deutsche Universität Medizinische Fakultät, Prague, Austria, 1903, president of the Josiah Macy Jr Foundation, for many years member of the board of directors of the New York Post-Graduate Medical School and Hospital and from 1910 to 1926 professor of clinical medicine, past president of the American Gastro-Enterological Association, lieutenant colonel in the medical reserve corps of the United States Army, was decorated by the Belgian Order of the Crown and the Palmes académiques of the French Academy in honor of his medical researches, aged 64, died, August 14

Francis Reynolds Haussling * Newark, N. J., Columbia University College of Physicians and Surgeons, New York, 1901, fellow of the American College of Surgeons, served during the World War, past president of the Medical Society of New Jersey and the Essex County Medical Society, attending surgeon, Newark City and Newark Memorial hospitals, adjunct surgeon, Hospital of St Barnabas, consulting surgeon, Presbyterian Hospital, Newark, and the Irvington (N. J.) General Hospital, aged 66, died, August 4, in Spring Lake

Warren Horace Fairbanks, Freehold, N. J., New York Homoeopathic Medical College and Flower Hospital, New York, 1916, member of the Medical Society of New Jersey and the American College of Chest Physicians, past president of the Monmouth County Medical Society, fellow of the American College of Physicians, at one time a minister, medical director of the Allenwood Sanatorium and Monmouth County Hospital for Tuberculosis, was on the staff of the Fitkin Memorial Hospital, Neptune, aged 57, died, August 5

Clement Levi Jones * Springfield, Ohio, Johns Hopkins University School of Medicine, Baltimore 1903, past president and secretary of the Clark County Medical Society, fellow of the American College of Physicians, at various times pathologist, Richly Memorial Hospital, member of the medical staff and cardiologist Springfield City Hospital, and director of the Springfield Clinical and Pathological Laboratory, aged 65, died, August 2, of coronary occlusion

Edmund Russell Brush * Zanesville Ohio, Starling-Ohio Medical College, Columbus, 1909, member of the House of Delegates of the American Medical Association from 1926 to 1928, in 1930, 1931, 1934 and 1935 and from 1938 to 1940, fellow of the American College of Surgeons, past president and secretary of the Muskingum County Academy of Medicine, served during the World War, city health officer, aged 56, died, July 28, in the Cleveland Clinic of pneumonia

Minot Flagg Davis, Cambridge Mass., University of the South Medical Department, Sewanee, Tenn., 1901, member of the Massachusetts Medical Society, formerly on the staffs of the Boston City Hospital and the Massachusetts Eye and Ear Infirmary, Boston, aged 78, died, July 26, in the Wiswall Sanatorium, Wellesley, of carcinoma of the rectum

William Carter Wescott * Atlantic City, N. J., University of Pennsylvania Department of Medicine, Philadelphia, 1908, member of the American Roentgen Ray Society, Radiological Society of North America, Inc., and the American College of Radiology, on the staff of the Atlantic City Hospital, aged 72, died, July 26, of coronary thrombosis

Claude William Walker * Iron Mountain, Mich., University of Pennsylvania Department of Medicine, Philadelphia, 1901; fellow of the American College of Surgeons, served during the World War, on the staff of the Iron Mountain General Hospital, aged 65, died, July 18, of injuries received in an automobile accident

Louis Lawrence Syman, Springfield, Ohio, Starling Medical College, Columbus, 1898, member of the Ohio State Medical Association, fellow of the American College of Physicians, veteran of the Spanish-American and World wars, aged 70, on the staff of the City Hospital, where he died, July 16, of heart disease

Alfred Franklin Yohe, Leavenworth Kan., Rush Medical College, Chicago, 1888, Bellevue Hospital Medical College, New York, 1892; for many years prison physician for the United States Penitentiary, at one time a member of the board of education, aged 76, died, July 23, in the Cushing Memorial Hospital

George Washington Vinyard, Jackson Mo., Missouri Medical College, St. Louis, 1875, member of the Missouri State Medical Association, past president and secretary of the South-east Missouri Medical Association, formerly member of the school board and mayor, aged 91, died July 2, of myocarditis

Walter H. Smyth, Westmount, Que., Canada, McGill University Faculty of Medicine, Montreal, 1896, lieutenant colonel of the Canadian Army Medical Corps and member of the military examining board, aged 68, on the staff of the Montreal General Hospital, where he died, July 26

Irenus Stewart Egan, Livingston, Mont., Kansas City University of Physicians and Surgeons, Kansas City, Mo., 1924; member of the Alaska Territorial Medical Association, aged 49, died, July 22, in Rochester, Minn., of bronchiopneumonia and empyema of the gallbladder

Ethel May Dolinsky, New York, New York Medical College and Hospital for Women, New York, 1905, fellow of the American College of Surgeons, on the staff of the Flower and Fifth Avenue Hospitals, aged 65, died, June 27, of cerebral hemorrhage and arteriosclerosis

Hugh Sanford Smith, Toronto, Ont., Canada, Trinity Medical College, Toronto 1890, L.R.C.P. Edinburgh, L.R.C.S., Edinburgh and L.R.F.P.S., Glasgow, 1893, served during the World War, aged 72, died, July 23, in the Toronto General Hospital

Miles Parker Omohundro * Washington, D. C., University of Virginia Department of Medicine, Charlottesville, 1922, member of the American Urological Association, aged 45, was found dead, July 28, of heart disease

Willis Howes Van Der Wart, Schenectady, N. Y.; University and Bellevue Hospital Medical College, New York, 1913, member of the Medical Society of the State of New York, aged 55, died, July 16, in the Ellis Hospital

William Henry Meddaugh, Port Hope, Mich., Detroit College of Medicine, 1907, served during the World War, aged 59, died, July 21, in the Hubbard Memorial Hospital, Bad Axe, of sarcoma of the maxilla

Alexander Green Touchstone, Meridian, Miss., Tulane University of Louisiana School of Medicine, New Orleans, 1917, served during the World War, aged 54, died, July 21, in Rush's Infirmary

James Henry Strider, Tillar, Ark.; University of Nashville (Tenn.) Medical Department, 1879, Vanderbilt University School of Medicine, Nashville, Tenn., 1880, aged 84, died, July 14

Alpheus Mahlon Shafer, Massillon, Ohio, Western Reserve University School of Medicine, Cleveland, 1917, member of the Ohio State Medical Association, aged 52, hanged himself, July 23

Robert Lee Mitchell, Warrior, Ala., Chattanooga (Tenn.) Medical College, 1894, member of the Medical Association of the State of Alabama, formerly mayor, aged 73, died July 2

Bruce Bruette Barber, Ashley, Ohio, Starling Ohio Medical College, Columbus, 1911, for many years county health commissioner, aged 59, died, July 9, of coronary thrombosis

Harold Romney Edwards, Montreal, Que., Canada, Hahnemann Medical College and Hospital of Philadelphia, 1897, served during the World War, aged 67, died July 20

Thomas J. Moss, New York, University of the City of New York Medical Department, 1893, member of the Medical Society of the State of New York, aged 77, died, July 25

Charles H. Robertson * Salem, Ore., Missouri Medical College, St. Louis, 1893, fellow of the American College of Surgeons, aged 71, died, July 16, of cerebral embolism

Livingston Byrns Sheppard * Paintsville, Ky., University of Tennessee College of Medicine, Memphis, 1931 formerly county health officer, aged 35, died, July 5, in Boston

August Schachner, Louisville, Ky., Louisville Medical College, 1888, fellow of the American College of Surgeons, aged 75, died, July 10, of hypertensive heart disease

William Spencer Love * Charleston, Mo., Vanderbilt University School of Medicine, Nashville, Tenn., 1908, aged 58, died, July 17, of a malignancy of the left lung

Edwin Stanton Lawrence, Des Moines, Iowa, State University of Iowa College of Homoeopathic Medicine, Iowa City, 1887, aged 79, died, July 26, of cerebral hemorrhage

John Alexander Neblett * Louisville, Ky., University of Louisville School of Medicine, 1924, served during the World War, aged 45, died, July 7, of coronary occlusion

Chauncey Thurston Shearer * Columbus, Ohio, Chicago College of Medicine and Surgery, 1911, aged 56, died July 25, in the White Cross Hospital of coronary thrombosis

John Charles Storz, Luzerne, Pa., College of Physicians and Surgeons, medical department of Columbia College, New York, 1892, aged 73, died July 5 of myocarditis

B. Whit Sutton, Huntland, Tenn.; University of Tennessee Medical Department, Nashville, 1899; member of the Tennessee State Medical Association; aged 75; died, July 9.

Arthur Alfred Payne, Colonia Grutly, Argentina, South America; State University of Iowa College of Medicine, Iowa City, 1928; aged 41; died, June 22, of carcinoma.

Roy Charles Elmore Ⓢ Durant, Miss.; Vanderbilt University School of Medicine, Nashville, Tenn., 1900; aged 64; died, July 26, in Jackson of coronary thrombosis.

Duncan Charles Shields, Bernard, Iowa; University of Michigan Department of Medicine and Surgery, Ann Arbor; 1895; aged 73; died, July 31, of acute nephritis.

Walter Marion Haggett, Chicago; College of Physicians and Surgeons, Keokuk, Iowa, 1887; member of the Illinois State Medical Society; aged 83; died, July 17.

Myles Standish Record, Abington, Mass.; Tufts College Medical School, Boston, 1925; aged 40; was burned to death, July 25, when his summer cottage caught fire.

Roscoe Leland Barlow, Gary, Ind.; St. Louis University School of Medicine, 1917; served during the World War; aged 47; died, July 29, of cardiac decompensation.

Ernest Washburn Emery, Denver; Harvard Medical School, Boston, 1905; aged 71; died in July at St. Luke's Hospital, of diabetes mellitus and gangrene.

Frank Joseph Monaghan Ⓢ Oneonta, N. Y.; Long Island College Hospital, Brooklyn, 1894; formerly health commissioner of New York City; aged 75; died, July 26.

Nannie Cecilia Dunsmoor Ⓢ Los Angeles; University of Southern California College of Medicine, Los Angeles, 1900; aged 80; died, July 16, in Fontana, Calif.

C. M. Townsend, Raynham, N. C.; Medical Department of Tulane University of Louisiana, New Orleans, 1893; aged 75; died, July 12, in a hospital at Lumberton.

Herschel Victor Brunker, Casey, Ill.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1915; served during the World War; aged 53; died, July 7.

Carson Charles Faulkner, Margaretville, N. Y.; Baltimore University School of Medicine, 1897; postmaster; served during the World War; aged 67; died, July 22.

Philip Constant Goergen Ⓢ Chicago; Loyola University School of Medicine, Chicago, 1919; examining physician for the draft board; aged 56; died, July 2.

James Madison Neary Ⓢ Brooklyn; New York Homeopathic Medical College and Flower Hospital, New York, 1920; aged 51; died, July 10, of heart disease.

Mary R. McConahy, Evanston, Ill.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1890; aged 101; died, July 26, of arteriosclerosis.

Joseph Harris Ball, Cleveland; University of Michigan Homeopathic Medical School, Ann Arbor, 1898; aged 68; died, July 18, of carcinoma of the stomach.

Arthur Bernard Ossege Ⓢ Perrysburg, Ohio; St. Louis University School of Medicine, 1926; aged 39; died, July 10, in Toledo of valvular heart disease.

Gaven Crane Dyott, Eugene, Ore.; University of Oregon Medical School, Portland, 1920; aged 49; died, July 15, of acute coronary occlusion and myocarditis.

George Vaughan Poynor, South West City, Mo.; Missouri Medical College, St. Louis, 1888; aged 85; died, July 23, of carcinoma of the mouth and throat.

Edward Louis Blake, Brooklyn; Long Island College Hospital, Brooklyn, 1908; aged 57; died, June 12, in the Lutheran Hospital of cirrhosis of the liver.

Robert Joseph O'Donnell, Cincinnati; Medical College of Ohio, Cincinnati, 1899; aged 66; died, July 15, in St. Mary's Hospital of cerebral thrombosis.

John Arte Usher, Savannah, Ga.; Maryland Medical College, Baltimore, 1904; member of the Medical Association of Georgia; aged 65; died, July 15.

James Edward Bobbitt, Jonesboro, Ark.; Memphis (Tenn.) Hospital Medical College, 1904; aged 62; died, July 13, of carcinoma of the prostate.

Bert Everett Lamb, Gardiner, Maine; Dartmouth Medical School, Hanover, N. H., 1891; formerly mayor; health officer; aged 77; died, July 28.

Clifford Pervines Fall Ⓢ Beatrice, Neb.; College of Physicians and Surgeons, Chicago, 1888; aged 78; died, July 26, of cerebral hemorrhage.

John Harrison Owens, Duncanville, Ala.; Memphis (Tenn.) Hospital Medical College, 1899; aged 67; died, July 1, of cerebral hemorrhage.

Amos Jones Mander, Bridgeton, N. J.; Medico-Chirurgical College of Philadelphia, 1905; aged 62; died, June 23, of chronic myocarditis.

Minnette Pratt Petrie, New York; University of Buffalo School of Medicine, 1900; aged 80; died, June 22, of thrombosis and arteriosclerosis.

A. L. Matthews, Florence, Ky.; Louisville Medical College, 1893; aged 73; died, July 7, of hypertensive cardiovascular renal disease.

Dwight Mackey, Hobart, Ind.; Chicago College of Medicine and Surgery, 1909; served during the World War; aged 57; died, July 16.

Sumner George Bush, Chelsea, Mich.; University of Michigan Homeopathic Medical School, Ann Arbor, 1896; aged 68; died, July 29.

John Edward Cannon, Celeste, Texas; Missouri Medical College, St. Louis, 1882; aged 83; died, July 15, of carcinoma of the stomach.

George W. Fisher, De Land, Fla.; Hospital College of Medicine, Louisville, Ky., 1882; aged 81; died, June 23, of arteriosclerosis.

Charles H. Hunt, Louisville, Ky.; Hospital College of Medicine, Louisville, 1897; died, July 17, in St. Anthony's Hospital of uremia.

Joseph M. Hodges, Boone, N. C.; Baltimore Medical College, 1904; formerly state senator; aged 75; died, July 18, of myocarditis.

Antonio Garcia Padilla, Brownsville, Texas; Escuela de Medicina de Nuevo Leon, Monterrey, Mexico, 1894; aged 71; died, July 27.

Robert Leland Westover, Okmulgee, Okla.; Medical College of Indiana, Indianapolis, 1898; aged 68; died, May 11, of myocarditis.

Charles Byron Kenton, Artesian, S. D.; Medical College of Indiana, Indianapolis, 1905; aged 60; died, May 3, of carcinoma of the liver.

John C. Sharrer, Francesville, Ind.; Kentucky School of Medicine, Louisville, 1880; aged 83; died, July 24, of coronary occlusion.

John Lawrence Smith Ⓢ Los Angeles; Rush Medical College, Chicago, 1901; aged 74; died, June 26, of coronary embolus.

John Johnston, Burgessville, Ont., Canada; Queen's University Faculty of Medicine, Kingston, 1906; aged 72; died, June 28.

Milton Kenneth Rosen Ⓢ Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1939; aged 27; died, June 12.

Walter Lewis Scofield, Fort Pierce, Fla.; University of Vermont College of Medicine, Burlington, 1907; aged 58; died, July 17.

William Jay Logie, Brantford, Ont., Canada; Victoria University Medical Department, Coburg, 1886; aged 81; died, July 10.

Frank L. Gibbs, Chillicothe, Ohio; Pulte Medical College, Cincinnati, 1896; aged 70; died, July 9, in a local hospital of uremia.

John W. Lee, Tulsa, Okla.; Detroit College of Medicine, 1894; aged 68; was found dead, July 1, of a self-inflicted bullet wound.

Herbert Quillen Willis Ⓢ Costa Mesa, Calif.; Ensworth Medical College, St. Joseph, Mo., 1894; aged 73; died, July 11.

Claude Levi Edge, Crosbyton, Texas; Atlanta (Ga.) Medical College, 1915; aged 53; died, June 21, of strychnine poisoning.

Robert E. Dullam, Battle Creek, Mich.; Detroit College of Medicine, 1903; aged 67; died, July 12, of terminal sclerosis.

Hyman B. Shapiro, Chicago; Rush Medical College, Chicago, 1903; aged 63; died, June 11, of gastric hemorrhage.

Horace Blake Hannon, Chicago; College of Physicians and Surgeons of San Francisco, 1903; aged 66; died, August 8.

Charles Thomas Leach, Bland, Mo.; Hospital College of Medicine, Louisville, Ky., 1898; aged 71; died, May 5.

Gaines R. Thigpen, St. Marys, Ga.; Atlanta Medical College, 1893; aged 72; died, July 15.

Alexander McNamara, Lockport, N. Y.; University of Buffalo School of Medicine, 1887; aged 80; died, July 1.

Bureau of Investigation

STIPULATIONS

Agreements Between Federal Trade Commission and Promoters of Various Products

The following items are abstracts of stipulations in which promoters of "patent medicines," cosmetics or medical devices have agreed with the Federal Trade Commission to discontinue certain misrepresentations in their advertising. These stipulations differ from the "Cease and Desist Orders" of the Commission in that such orders definitely direct the discontinuance of misrepresentations. The abstracts that follow are presented primarily to illustrate the effects of the provisions of the Wheeler-Lea Amendment to the Federal Trade Commission Act on the promotion of such products.

Air-Way Reducing Girdle.—The Ohio Truss Company, trading as Ohio Airway Surgical Company, Cincinnati, signed a stipulation with the Federal Trade Commission in September 1940 promising to desist from representing that the action of this device on the wearer is massage-like or that the girdle will massage the body of the wearer; that using it will cause one to reduce or will effect a definite reduction in weight or measurement, or result in the loss of fatty tissue; that the girdle is non-absorbent; that the possibility of cutaneous infection from excreted waste matter absorbed by a girdle is eliminated by wearing an "Air-Way Girdle."

Allay.—This is put out by Pickgan Labrofacts, Inc., New York. In June 1940 the concern stipulated with the Federal Trade Commission that it would cease representing through the use of such expressions as "pain banisher," "get rid of pain," "insure freedom from pain," "drives away pain," "kills pain," or in any other manner that its product terminates pain or has any effect on pain in excess of affording temporary relief; that it is safe for use, or that it affords a new method for relieving pain. The company further agreed to discontinue representations that "Allay" has any efficacy in preventing the development of colds, or is an effective remedy for colds, or that it acts or commences to act in three seconds after the tablets are taken. This stipulation superseded and modified a somewhat similar one that the Commission had accepted from the same concern in October 1937.

Anticafrez.—This is put out by one V. G. Fernandez, Chicago, trading as Wonder Laboratory. In May 1940 Fernandez signed a stipulation with the Federal Trade Commission promising to discontinue certain misrepresentations. Among these were that his product is capable of eliminating dandruff, stopping falling hair, giving to the hair the vigor and luster of youth, improving the hair or scalp, preventing baldness or gray hair and causing one to have an abundant growth of hair.

Aviola.—This is put out by a Frederick Hoffman, trading under the name Maxine Company, Fairfax, Okla. In April 1940 Hoffman stipulated with the Federal Trade Commission that he would cease representing his product as a preventive or cure for rectal ailments; that it is "Guaranteed under the Pure Food and Drugs Act"; that it has been examined or approved by the government, or that the latter guarantees that "Aviola" complies with the law.

Barker's XZMO.—This is put out by one H. W. Barker, trading as Barker Chemical Co. and Barker Laboratories, Sparta, Wis. A stipulation signed with the Federal Trade Commission by Barker in July 1940 promised the discontinuance of certain advertising misrepresentations. Among these were that the product is a competent treatment for eczema, piles, athlete's foot, nerve disorders, weed poisoning or any other skin or flesh troubles; that it has any appreciable therapeutic value in excess of a mild antiseptic and astringent with no keratolytic or penetrating action; that it will destroy the cause of itching, or that the information furnished by him to sufferers of eczema, athlete's foot, piles or skin troubles is reliable. Barker also agreed to cease using the word "XZMO" or any other term that simulates the word "eczema."

Beatrice Mable's Pore Cream.—This is put out by Beatrice Mable, Inc., St. Louis, which in October 1940 signed a stipulation with the Federal Trade Commission agreeing to discontinue certain misrepresentations in its advertising. Among these were that this cream will clear the skin of blackheads or banish blackheads, remove blackheads permanently or have any effect on blackheads beyond tending to soften temporarily the sebum in the pores; that it will reduce or contract enlarged pores or is a competent treatment for enlarged pores; that it has any special ingredients or acts in a way different from competing products; that a single application will remove dust, dirt or makeup embedded in the pores for days or weeks or that blackheads or enlarged pores are due to faulty diet or to a cutaneous condition requiring daily correction. Beatrice Mable, Inc., further agreed to cease and desist from representing, directly or indirectly, that it owns, operates or controls a laboratory.

Bilaphen Tablets.—Having advertised this product as enabling the user to say goodbye to a distressed feeling resulting from an upset stomach or to aid in relieving such condition (under referring to the relief of that condition when due to constipation), or as a remedy that will restore the condition when due to constipation, or as a remedy that will restore the liver to normal functioning or that will cause normal or natural movements, the Victoria Chemical Company, Newark, N. J., in October 1940 promised the Federal Trade Commission to discontinue these misrepresentations.

Carolyn Nilson Cosmetics.—The Carolyn Nilson System of Beauty Culture, Detroit, is conducted by one Carolyn Nilson Dietrich. In October 1940 this person stipulated with the Federal Trade Commission that she would cease making certain misrepresentations in the sale of her cosmetics, put out in conjunction with a massage and gymnastics course. Among these misrepresentations were that her preparations have been endorsed or approved by physicians, Hollywood stars or leaders everywhere; that her hair tonic preparation or an eyelash preparation will stimulate or in any way cause the hair to grow and that her "Rust Developing Cream" and "Reducing Lotion" are effective for their respective purposes.

Concentrated Food Particle (Wheat Germ Oil).—In June 1940 Leonard J. Hartman, Brooklyn, promised the Federal Trade Commission that he would cease advertising that this product will prevent or overcome disease or afford an increase in health or energy, and is a competent treatment or effective remedy for certain ailments of women; that it will restore potency or is a competent treatment or effective remedy for sterility, unless the representation is limited to its aid in treating the condition when it is due to a vitamin E deficiency and it is further explained in direct connection therewith that sterility due to a vitamin E deficiency is an extremely rare occurrence.

Corn Stick.—Joseph Balassa, Newark, N. J., trading as Balassa Laboratories, signed a stipulation with the Federal Trade Commission in May 1940 agreeing to cease representing that this product will remove bunions or end or relieve the pain incident to them.

Delora Cosmetics.—These are put out by a Harold C. Breckenridge, Detroit, trading as the Quality Chemical Company, and include "Delora Alice Skin Lotion," "Delora Alice Fine Perfumes," "Flower of the Orient" and "LaFrance." In March 1940 Breckenridge promised the Federal Trade Commission to cease representing that the skin lotion has a healing action. Back in December 1936 Breckenridge had signed another stipulation with the Commission, promising to cease representing that his "Delora Alice Healthy Hair Shampoo" would make hair grow, that his "Nature's Blood Purifier and Laxative Tonic" would benefit the liver, stomach, kidneys or nerves, that his "Magic Cough Syrup" was a germ killer and met all requirements of the Pure Food and Drug Act and that his "Magic Hits The Spot Liniment" would relieve sprains, sunbago and rheumatism.

Hannon's Emergency Medicine.—This is a product of Hannon's Medicines, Inc., Brookhaven, Miss. In October 1940 the concern stipulated with the Federal Trade Commission that it would withdraw certain misrepresentations in the sale of its product. Among these were that the preparation has any value as a treatment for menstrual colic or asthma; that it is a competent remedy or effective treatment for croup, laryngitis and other ailments; that it is a remedy or heals or cures or has any therapeutic value other than that of a local counterirritant or a rubefacient; that it affords immediate, certain or instant relief from aches or pains or such relief within any specified period of time.

Hay-No.—This is put out by Morten Laboratories, Inc., Dallas, Texas, formerly operating under the name Hay-No Laboratories, Inc. In May 1940 the concern entered into a stipulation with the Federal Trade Commission promising to discontinue the following misrepresentations: that "Hay-No" or any other preparation of similar ingredients or properties, sold under that or any other name, is a competent remedy or effective treatment for hay fever, or that it has any therapeutic value in excess of affording symptomatic relief for the disease, or that the results to be achieved by the use of the product in the treatment of sinus irritations, head colds, air passages clogged by colds, distress of nose-blowing and sneezing, stuffiness or other symptomatic conditions, are amazing, wondrous or quick or that the product is a discovery. Two months later (July 1940) the Ferguson Company, Inc., Dallas, Texas, which apparently is an advertising agency, also signed a similar stipulation with the Federal Trade Commission.

Hobo Medicine.—The Hobo Medicine Company, Beaumont, Texas, which puts this out, signed a stipulation with the Federal Trade Commission in May 1940 agreeing to discontinue the following misrepresentations: that the preparation is a competent treatment for kidney or bladder disorders, is an aid to restoring normal health to those suffering from such disorders or will relieve or aid in correcting them; will help cleanse or remove from the system or blood stream excessive poisons, irritating acid or dangerous poisonous wastes, have any effect on the blood stream or is an aid to lovelier skin, and that men and women have been aided to better health by its use. Another government agency, the Food and Drug Administration, has at different times taken action against the Hobo Medicine Company because of false and fraudulent claims on the labels of its "Hobo Kidney and Bladder Remedy." One of the earliest of these cases was abstracted in THE JOURNAL, July 16, 1921.

Mag-Net-O-Balm.—This nostrum was represented in the advertising to be, among other things, a remedy or competent treatment for varicose veins or leg swellings or, alone or in connection with the application of heat, rubbing or exercise, a competent method for treating the pains of sciatica, rheumatism, lumbago, lame back, stiff neck, headache and some other disorders. In May 1940 Samuel Cohen, doing business as the S. C. Sales Company, Baltimore, promised the Federal Trade Commission that he would discontinue these and other misrepresentations. In this connection it is interesting to note that three years earlier (July 1937) the Post Office Department had delisted from the mails a concern run by Samuel Cohen of Baltimore under the names *Gerald's Balm, Inc.*, *Co-Operative Balm Co.* and *Co-Operative Laboratories*, on the ground that "Gerald's Balm," the product it was selling by mail as an all-around rupture cure, was a fraud. This case was dealt with in THE JOURNAL, April 9, 1938, page 1294. In May 1938 the Post Office Department issued a supplementary fraud order to cover the new names, *Magneto Balm Co.* and *Magneto Balm Corporation*, which Cohen had adopted apparently with the idea of evading the original fraud order.

Marshall's Arch Supporters.—These devices were sold by Adam, Frank and Rudolph Marshall, trading as A. Marshall and Sons, Newark, N. J. In August 1940 these persons signed a stipulation with the Federal Trade Commission in which they agreed to discontinue certain misrepresentations in the sale of their arch supporters. Among these were that the use of the devices will permanently end foot troubles, remove calluses regardless of their nature or, unqualifiedly, assure instant and permanent relief in cases of weak arches, that the supporters are made to order, that is, fashioned from a positive cast made from a negative impression of the individual customer's foot through the use of some plastic material, that they are or will remain sanitary when used for the purposes for which they are intended or that shoes with insoles padded haphazardly, exercises and treatments are only temporary, impractical and expensive substitutes.

Marvan Dermopathic Salve.—In May 1940 the Marvan Laboratory, Inc., New York, promised the Federal Trade Commission that it would discontinue the following misrepresentations in the promotion of this product: that it is an effective remedy or competent treatment for eczema, itching and other cutaneous disorders or has any value in the treatment of them aside from offering temporary relief, or that the concern conducts or operates a laboratory when such is not a fact.

Milt's Num-O-Col Ointment.—In May 1940 the Num O Col Company, Inc., Oklahoma City, promised the Federal Trade Commission to cease advertising that its product is an effective treatment for pneumonia, influenza or common colds or that it is a competent remedy for sore throat or rheumatism, unless the representation is limited to such relief of symptoms of these conditions as may be afforded by its counterirritant properties.

Pinkston's Corn and Callus Remover.—This and "Pinkston's Bunion Reducer" are put out by a Henry J. Pinkston of Chicago, trading as the Pinkston Laboratories. In August 1940 Pinkston signed a stipulation in which he promised the Federal Trade Commission that he would discontinue some misrepresentations in his advertising. Among these were that the "Corn and Callus Remover" is one of the greatest discoveries of modern times or, in fact, a discovery at all, that it will remove corns or calluses by the roots or that these do have roots. Further, he promised to cease representing that his "Bunion Reducer" will do more than remove the pain caused by inflammation of the skin over the bunion and that he would cease using the word "Reducer" as a part of the trade name of his product, or in any other manner representing that it will reduce bunions.

Pearless Rheumatism Remedy.—In October 1940 J. H. Dornheggen, trading as the J. H. Dornheggen Medicine Company, Cincinnati, promised the Federal Trade Commission that he would discontinue certain misrepresentations in the sale of this product. Among these were the use of the word "Remedy" or other words of similar import or the implication that the product is an effective treatment for rheumatism or has any therapeutic value in such treatment in excess of affording temporary relief for the symptoms in cases of rheumatoid arthritis, that it is a competent preparation for arthritis, neuritis, sciatica, lumbago, neuralgia or "Rheumatic Pains of the Kidneys", that it has any therapeutic value in the treatment of these ailments in excess of affording temporary symptomatic relief; that it prevents relapses or recurrences of rheumatic pains, or that the preparation is a discovery.

Perma Tonic.—The Katz Drug Company, Kansas City, Mo., promised the Federal Trade Commission in June 1940 to discontinue some advertising misrepresentations in the sale of this nostrum. Among these were that this so-called tonic is a health builder, unless it is explained in direct connection therewith that "Perma Tonic" of itself does not build health, that the system needs the ingredients contained in the product and that the preparation is a competent treatment or effective remedy for headaches or biliousness, unless limited to temporary relief of these conditions when they are due to constipation, and for constipation, unless limited to temporary relief. The company further promised that it would thereafter describe its preparation as a "Gastric Tonic" instead of merely as a "Tonic".

Physicians Formula Cosmetics, Inc., Products.—These are put out by the Los Angeles concern named here. In a stipulation that the company signed in September 1940 it promised the Federal Trade Commission to discontinue the use of the letters "Rx" or any other letters, signs or symbols which might give the impression that the products in question are in fact medicinal ones, that the "cholesterin" or any other ingredient in its cosmetic preparations restores or replaces or has the capacity to restore or replace natural oils in the skin or that it effectively combats or prevents crow's feet, wrinkles or dry skin by means of oils applied to the skin or in any other manner, that the ingredients in its products penetrate the skin deeply or effectively, that its "Cleansing Cream" removes every particle of makeup, grime and dirt, or that its "Facial Masque" or its product heretofore designated "Tissue Cream" can be depended on to clear up blackheads, whiteheads or enlarged pores or to keep the skin youthful or free from lines.

Silver Pine Hair Tonic.—Henry Charambura, trading as Silver Pine Manufacturing Company, New York, promised the Federal Trade Commission in September 1940 to discontinue certain misrepresentations in his advertising of this "tonic". Among them were that the stuff retards or stops falling hair, develops healthy scalps, revitalizes the scalp, grows hair or eliminates or destroys dandruff. He also stipulated that he would desist from using the word "Tonic" alone or in connection with other words to describe any preparation which does not contain ingredients capable of stimulating scalp circulation by means of a rubefacient action. An echo of this case was noted in December 1940 when an advertising agency, Dundas and Frank, Inc., New York, also signed a similar stipulation.

Skin Food.—This is put out by the Alexandra de Markoff Sales Corporation, New York. In May 1940 this concern stipulated with the Federal Trade Commission that it would cease using the words "Skin Food" or others of similar meaning to designate a product which does not serve as a food or nourishment for the human skin or tissues. The company further promised to cease representing that its preparation, when applied to the skin, is absorbed by the skin with the result that the skin is fed or nourished or otherwise therapeutically benefited by absorption of the product, or that its products will erase or remove lines or wrinkles from the skin, build up the tissues, remold the face or restore or perpetuate youthful or firm contours to the face or throat.

Smith's Instant Hair Grower, Instant Hair Grower Special and Instant Tetter Salve and Scalp Cure.—These are put out by one Ada G. Smith, trading as Smith Manufacturing Company, Fayetteville, N. C., who in July 1940 stipulated with the Federal Trade Commission that she would discontinue certain advertising misrepresentations. Among these were that her two "hair grower" products grow new hair or increase present hair from 1 to 3 inches per month, or grow hair on any bald head or temple in three weeks or less where the roots are living. She also promised to cease representing that "Smith's Instant Tetter Salve and Scalp Cure" is a competent remedy or an effective treatment for dry scalp, tetter, eczema, dandruff, falling hair or other scalp diseases, heals sores or cutaneous diseases or would do more than temporarily relieve the itching that may be associated with certain cutaneous diseases and promote the healing of raw surfaces. Ada G. Smith also agreed to discontinue using the word "Cure" as part of the trade name of "Smith's Instant Tetter Salve and Scalp Cure," and the word "Grower" as part of the trade names "Smith's Instant Hair Grower" and "Smith's Instant Hair Grower Special".

Tyson's Products.—These preparations, put out by Tyson and Company, Inc., Paris, Tenn., include "J. & T. Tried and True Vegetable Compound" and a number of cosmetics. In August 1940 the Federal Trade Commission got the concern to sign a stipulation agreeing to discontinue certain misrepresentations in connection with the sale of these. Among them were that the "Vegetable Compound" is a dependable or competent remedy for women's ailments, nervousness or malnutrition, or that it is scientifically compounded, that any one of their "La Dainty" products, including "Hair Dressing & Grower," "Special Hair Grower," "Temple Grower," "Pressing Compound," "Quinine Pomade" and "Sheik Cream," makes hair natural, restores natural color to the hair, prevents baldness, overcomes deficiencies of the skin and scalp or eliminates the cause of dandruff. The concern also promised to cease representing that its "La Dainty Cold Cream," "Mine Carue Tissue Cream," "Alme Carue Cleansing Creme," "La Dainty Lucky Lovin' Cream," "Tyson's Ideal Bleaching Creme," "La Dainty Vanishing Cream" or any similar preparation is a skin food or skin invigorator or makes skin beautiful or lighter. Further, it was promised that the advertising would cease representing that "La Dainty Bleaching Ointment" gives youthful beauty and glow to the skin, that "La Dainty Beauty Bar" nourishes and stimulates the skin or that "La Dainty Special Face Soap" will cause skin to become young looking.

Vim Herb.—This was a product of A. P. Durham, trading as Herb Products Company, Anderson, S. C. In August 1940 Durham signed a stipulation with the Federal Trade Commission in which he promised to cease representing that "Vim Herb" will strengthen or build up the system, rid the system of poisons, completely cleanse the intestinal walls or act as a tonic for the blood, that it will benefit every one, relieve pain, clear the skin of eruptions or afford immediate, lasting or positive relief from any disease, disorder or ailment. Durham also promised to desist from representing that his preparation is a tonic, that it has benefited thousands or that the preparation is harmless, without at the same time clearly indicating that its use may be injurious when there are present acute inflammatory conditions of the gastrointestinal tract. In 1937 another government agency, the Food and Drug Administration, had taken action against A. P. Durham for selling "Lifescy's Vim Herb," apparently the same thing as Vim Herb, under fraudulent claims as an alleged cure for disorders of the blood, liver, kidneys and some other things. Government chemists reported that it consisted of plant extracts and one or more emodin bearing drugs.

Wildie Exhaler.—According to the advertising of Harold Wells Turner, trading as Health Culture Company, New York, this device would make one healthy and a brief use of it would give one the exhilarating effect of a cleaner blood stream. It was supposed to be more effective than other known devices for strengthening the lungs and was represented to add power to the voice and promote one's ability to resist diseases. In September 1940 the Federal Trade Commission prevailed on Turner to sign a stipulation that he would discontinue these representations. He further agreed that he would cease representing that the health of persons has been restored or benefited by the use of uncooked foods, as outlined in his book "Uncooked Foods", that many cases of increased strength or vitality have resulted from a strictly vegetarian regimen; that the book called "No Animal Food" contains information which, if followed, enables a person to increase his strength or vitality, and that reading and putting into effect the principles expressed in "The Enlightened Life" will make one physically regenerated or healthy, or will enable one to live a long life. Earlier (September 1937) Turner had signed a stipulation promising the Federal Trade Commission that he would no longer represent that his "Dr. Wright's Irritation Outfit" would keep the inside of the body clean and that failure to do so would cause numerous diseases and ailments, that the use of this irritating device would cure those suffering from tuberculosis, rheumatism, catarrh and some other things, and that it would abort mental attacks in cases of incipient insanity.

Correspondence

HYPERSENSITIVITY TO THIAMINE

To the Editor:—In making a report on a patient with symptoms suggesting sensitivity to thiamine hydrochloride (*THE JOURNAL*, July 19, p. 176) Laws stated that an intradermal test made with a commercial preparation of thiamine resulted in the formation of a large urticarial wheal, that thiamine given parenterally was capable of sensitizing human beings and that "it seems advisable to make intradermal tests with thiamine hydrochloride before administering it, particularly to patients who previously have received thiamine." Unfortunately, no mention was made of the strength of the commercial preparation used in making the intradermal test.

While I am in entire agreement with Laws as to the possible development of human hypersensitivity to thiamine, I have pointed out in an article published in the July issue of the *Journal of Allergy* (Hypersensitivity to Thiamine Chloride, with a Note on Hypersensitivity to Pyridoxine Hydrochloride) that the significance of wheal formation following intracutaneous injection of thiamine is to some extent dependent on the strength of the preparation used. Two patients with symptoms of thiamine hypersensitivity reacted with wheal formation following the intracutaneous injection of 0.05 cc. of a commercial preparation of thiamine hydrochloride containing 50 mg. per cubic centimeter, but so also did 5 control subjects. However, when intracutaneous injections were made with 0.03 cc. of a preparation containing only 5 mg. per cubic centimeter, the control subjects showed no reaction although the hypersensitive patients again showed wheal formation.

On the basis of these observations it seems likely that intracutaneous testing with thiamine preparations containing in the vicinity of 50 mg. per cubic centimeter would result in many nonspecific reactions. If it is desired to use intradermal tests for the discovery of patients who have become hypersensitive to thiamine, more dilute preparations, containing probably not more than 5 mg. per cubic centimeter, should be used.

MERRITT H. STILES, M.D., Philadelphia.

RODENT CONTROL AND TRICHINOSIS

To the Editor:—There appeared in *THE JOURNAL*, June 28, page 2855, an editorial discussing progress in the control of trichinosis with particular reference to the value of rodent control in reducing the incidence of infection with *Trichinella spiralis* among garbage-fed swine. The difference between the observations of Hobmaier and Geiger and those of McNaught and Zapata formed the basis for the statement that "rodent control apparently is a statistically verifiable method of reducing trichinosis percentage in garbage-fed swine."

The California Department of Public Health, cooperating with the United States Public Health Service, has examined 261 garbage-fed swine from the same area. These examinations were conducted under the supervision of Dr. K. B. Kerr as part of the statewide survey of the trichinosis problem. Of these, 13.8 per cent were found infected with *Trichinella*, an incidence comparable to that found by Hobmaier and Geiger previous to the institution of rodent control on these ranches. Our examinations were made during the past sixteen months and after the rodent control program on these ranches had been in effect for at least two years. Furthermore, the examination of 71 Norway rats from four of these ranches has revealed only 11.8 per cent infected with *Trichinella*—an incidence which is lower than that found in the hogs examined. Our evidence, therefore, does not support the thesis that rodent control is an effective method of reducing the incidence of infection with *Trichinella* in garbage-fed swine.

In a personal communication Dr. James B. McNaught stated that in his opinion a rodent control program would not materially reduce the incidence of *Trichinella* in garbage-fed swine. I believe that the lower incidence found by McNaught and Zapata must be largely related to factors other than a rodent control program.

BERTRAM P. BROWN, M.D., Sacramento, Calif.

Director of Public Health, Department of
Public Health, State of California.

ELECTRON MICROSCOPE

To the Editor:—May I add a comment to the interesting and important question of examination of tissue with the electron microscope?

It is important always to have in mind that any change in the water content away from the normal of cells or tissues results in a change in their internal structure. In the study reported by Seymour and Benmosche (*THE JOURNAL*, May 31, p. 2489) the cells examined had been in distilled water, a medium not iso-osmotic with the normal fluid surrounding of any body cells. Immersion in distilled water would result in an imbibition swelling, which would alter the physical cell structure considerably from its living condition. This is equally true of most technical methods, whether they involve drying, boiling or freezing or any means that alters normal water relations. Until some method can be devised for examining cells or tissues in an accurately iso-osmotic medium, interpretation of the microscopic picture will necessarily rest on artefact.

A. E. TAFT, M.D., Bryn Mawr, Pa.

DEATH FROM EMBOLISM AFTER INJECTION OF VARICOSE VEINS

To the Editor:—The article entitled "Death from Pulmonary Embolism Following the Injection of Varicose Veins" (*THE JOURNAL*, August 2, p. 347) requires comment. Nunn and Harrison draw attention to a mortality from pulmonary embolism following what they term "routine injection treatment" for varicose veins. From time to time I have emphasized in the literature the dangers of so-called routine treatment in such cases, but evidently these warnings have gone unheeded. The authors are apparently unable to explain the fatality after having carefully studied the case and performed a detailed autopsy.

After reading this report in *THE JOURNAL*, I find the following significant points in the history: The patient was treated with 2 cc. of sodium morrhuate as the first injection. The authors state that there was no decided reaction after this treatment and a satisfactory thrombosis followed. Yet six weeks later, on admission to the hospital, which was two days before death, physical examination disclosed an indurated area 8 by 3 cm. surrounding a thrombosed segment of the vein in the right calf. The authors call this a "chemical phlebitis."

Such a reaction six weeks after the initial injection is unusual and probably points to the existence of an unrecognized latent phlebitis. I have previously emphasized in the literature the frequency of this latent condition and have stressed the inadvisability of giving a full dose of morrhuate as the first injection in any case of varicose veins. De Takats was the first one to emphasize the frequent occurrence of latent infection in varicosities, but this lesson has still not been absorbed by the medical profession.

The authors report that there was no decided reaction after the initial treatment but call attention to the large indurated area that was found six weeks later. This sounds like a typical delayed reaction following injection in phlebitis. As I have pointed out previously (*The Treatment of Phlebitis in Varicose*

Veins, *Lancet* 1:944 [April 25] 1936), this delay corresponds to the incubation period of the bacteria in the wall of the vein. These cases require a different injection technic, especially at the outset. Some of the rules to be followed are:

1 Never give a full dose of any sclerosing agent as an initial injection in any case of varicose veins.

2 Always keep in mind the possibility of the presence of latent or subacute phlebitis in any case of varicose veins.

3 Test for the presence of such phlebitis by provocative mild injections of invert sugar and by the use of the sedimentation rate.

I feel that these sporadic cases of pulmonary embolus can be kept at a minimum by faithful adherence to these warnings.

H I BIEGELEISEN, M.D., New York
Chief, Varicose Vein Clinic, Beth David Hospital

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE
Chicago, Feb 16-17, 1942. Council on Medical Education and Hospitals Sec, Dr William D. Cutter, 535 North Dearborn Street, Chicago.

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in *THE JOURNAL*, September 6, page 883.

BOARDS OF MEDICAL EXAMINERS

ALABAMA Montgomery, June 16-18 Sec, Dr J N Baker, 519 Dexter Ave. Montgomery.

ARIZONA * Phoenix, Oct 7-8 Sec, Dr J H Patterson, 826 Security Bldg. Phoenix.

ARKANSAS * Medical Little Rock, Nov 6-7 Sec, Dr D L Owens Harrison Electric Little Rock, Nov 6 Sec, Dr Clarence H Young, 1415 Main St., Little Rock.

CALIFORNIA Oral examination (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), San Francisco, Oct 1. *Written* Sacramento, Oct 20-23 Sec, Dr Charles B. Pinkham, 1020 N St., Sacramento.

COLORADO * Examination Denver, Oct 7. *Endorsement* Denver, Oct 8-10 Sec, Dr George R. Buck, 831 Republic Bldg. Denver.

CONNECTICUT Medical Examination Hartford Nov 11-12. *Endorsement* Hartford Nov 25 Sec, Dr Creighton Barker, 258 Church St., New Haven. *Homeopathic* Derby, Nov 11-12 Sec, Dr Joseph H. Evans, 1488 Chapel St., New Haven.

DELAWARE Dover, July 14-16 Sec, Medical Council of Delaware, Dr Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA * Nov 10-11 Sec, Dr George C. Ruhlman, 6150 East Municipal Bldg. Washington.

FLORIDA * Sec, Dr William M. Rowlett, Box 786 Tampa.

GEORGIA Atlanta, Oct 14-15 Sec, State Examining Boards, Mr R. C. Coleman, 111 State Capitol. Atlanta.

HAWAII Honolulu Jan 12-15 Sec, Dr James A. Morgan, 48 Young Bldg., Honolulu.

IDAHO Boise, Oct 7. Dir, Bureau of Occupational License, Mr Walter Curtis, 355 State Capitol Bldg., Boise.

ILLINOIS Chicago, Oct 14-16 Supt. of Registration, Mr Lucien A. Fife, Department of Registration and Education, Springfield.

INDIANA Indianapolis, June 16-18 Sec, Board of Registration and Examination, Dr J. W. Bowers, 301 State House. Indianapolis.

KANSAS Kansas City, Sept 23-24 Sec, Board of Medical Registration and Examination, Dr J. F. Hassig, 905 N. 7th St. Kansas City.

KENTUCKY Louisville, Dec 8-10 Sec, Dr A. T. McCormack, 620 S. Third St. Louisville.

MAINE Portland, Nov 12-13 Sec, Board of Registration of Medicine, Dr Adam P. Leighton, 129 State St., Portland.

MARYLAND Medical Baltimore, Dec 9-12 Sec, Dr John T. O'Mara, 1215 Cathedral St. Baltimore. *Homeopathic* Baltimore, Dec 9-10 Sec, Dr John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS Boston, Nov 4-7 Sec, Board of Registration in Medicine, Dr Stephen Rushmore, 413 F. State House. Boston.

MICHIGAN * Lansing, Oct 15-17 Sec, Board of Registration in Medicine, Dr J. Earl McIntyre, 203 Hollister Bldg. Lansing.

MINNESOTA * Minneapolis, Oct 21-23 Sec, Dr J. T. DuBois, 230 Lowry Medical Arts Bldg., St. Paul.

MISSISSIPPI * Reciprocity Jackson, December. Asst. Sec., State Board of Health, Dr R. N. Whitfield. Jackson.

MISSOURI Kansas City, Oct 29-31 Sec, State Board of Health, Dr James Stewart, State Capitol Bldg., Jefferson City.

MONTANA Helena, Oct 6-8 Sec, Dr Otto G. Klein, First National Bank Bldg. Helena.

NEVADA * Reciprocity with oral examination Nov 3. Final date for filing application is Oct 20. Sec, Dr Fred W. Anderson, 315 N. Carson St., Carson City.

NEW JERSEY Trenton, Oct 21-22 Sec, Dr E. S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO Santa Fe, Oct 13-14 Sec, Dr I. C. Grand, Ward 135 Santa Plaza, Santa Fe.

NEW YORK Albany Buffalo New York and Syracuse, Sept 15-18. Chief, Bureau of Professional Examinations, Mr Herbert J. Hamilton, State Education Department, 315 Education Bldg., Albany.

NORTH CAROLINA Endorsement December. Sec, Dr W. D. James, Hamlet.

NORTH DAKOTA Grand Forks, Jan 6-9 Sec, Dr G. M. Williamson, 4½ S. Third St., Grand Forks.

OKLAHOMA * Reciprocity Oklahoma City, Dec 10 Sec, Dr James D. Osborn, Jr. Frederick.

PENNSYLVANIA Philadelphia, January. Acting Sec, Bureau of Professional Licensing, Mrs. Marguerite G. Steiner, 358 Education Bldg., Harrisburg.

RHODE ISLAND * Providence, Oct 2-3 Sec, Division of Examiners, Dr Robert M. Lord, 366 State Office Bldg., Providence.

SOUTH CAROLINA Columbia, Nov 10-11 Sec, Dr A. Earle Boozer, 505 Saluda Ave., Columbia.

SOUTH DAKOTA * Pierre, Jan 13-14. Dir., Medical Licensure, Dr J. F. D. Cook, State Board of Health, Pierre.

TEXAS Austin, Nov 17-19 Sec, Dr T. J. Crowe, 918 Texas Bank Bldg., Dallas.

VERMONT Burlington, Feb 10-12 Sec, Board of Medical Registration, Dr F. J. Lawless, Richford.

VIRGINIA Richmond, Dec 9-12 Sec, Dr J. W. Preston, 30½ Franklin Road, Roanoke.

WEST VIRGINIA Charleston, Nov 17-19 Sec, Public Health Council, Dr C. F. McClintic, State Capitol, Charleston.

WISCONSIN * Madison, Jan 13-15 Sec, Dr H. W. Shutter, 425 E. Wisconsin Ave. Milwaukee.

WYOMING Cheyenne, Oct 6-7 Sec, Dr M. C. Keith, State Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA Tucson, Sept 16 Sec, Mr Franklin E. Roach, Science Hall, University of Arizona, Tucson.

CONNECTICUT Oct 11. Address, State Board of Healing Arts, 1945 Yale Station, New Haven.

DISTRICT OF COLUMBIA Washington, Oct 20-21 Sec, Dr George C. Ruhlman, 6150 East Municipal Bldg. Washington.

FLORIDA DeLand, Nov 1. Final date for filing application is Oct 17. Sec, Professor J. T. Conn, John B. Stetson University, DeLand.

IOWA Des Moines, Oct 14. Dir., Division of Licensure and Registration, Mr H. W. Greff, Capitol Bldg., Des Moines.

MINNESOTA Minneapolis, Oct 7-8 Sec, Dr J. C. McKinley, 126 Millard Hall, University of Minnesota, Minneapolis.

NEBRASKA Lincoln, Oct 7-8. Dir., Bureau of Examining Boards, Mrs. Jeannette Crawford, 1009 State Capitol Bldg., Lincoln.

OREGON Portland, Nov 1. Final date for filing application is Oct 15. Sec, State Board of Higher Education, Mr Charles D. Byrne, University of Oregon, Eugene.

RHODE ISLAND Providence, Nov 19. Chief, Division of Examiners, Mr Thomas B. Casey, 366 State Office Bldg. Providence.

SOUTH DAKOTA Aberdeen, Dec 5-6 Sec, Dr G. M. Evans, Yankton.

WISCONSIN Madison, Sept 20. Sec, Professor Robert N. Bruer, 3414 W. Wisconsin Ave., Milwaukee.

California February Report

The Board of Medical Examiners of the State of California reports the written examination for medical licensure held at Los Angeles, Feb 25-27, 1941. The examination covered 9 subjects and included 90 questions. An average of 75 per cent was required to pass. Seventy-two candidates were examined, 66 of whom passed and 6 failed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
College of Medical Evangelists	(1940) 83.2	86.6	
Stanford University School of Medicine	(1940)	81.9	
University of California Medical School	(1940) 86.4	87.2	
University of Southern California School of Medicine	(1938) 88.1		
(1940) 79.2	81.2, 82.2	87	
University of Colorado School of Medicine	(1940)	84.4	
George Washington University School of Medicine	(1940)	86.3	
Georgetown University School of Medicine	(1940)	84.1	
Chicago Medical School	(1928)	80.7	
Northwestern University Medical School	(1940)	81.6*	
University of Chicago The School of Medicine	(1940)	82.4	
University of Illinois College of Medicine	(1940) 77.4	84.4*	
Indiana University School of Medicine	(1939)	80.3	
State University of Iowa College of Medicine	(1940)	80	
University of Kansas School of Medicine	(1940) 78.6	85.3	
University of Louisville School of Medicine	(1940)	81.2	
Johns Hopkins University School of Medicine	(1934)	82.7	
(1939) 82			
Harvard Medical School	(1939)	86	
University of Michigan Medical School	(1939) 85	(1940) 84.3	
St. Louis University School of Medicine	(1940)	84.2	
Creighton University School of Medicine	(1938)	79	
(1940) 79.7	81.3, 82.4		
University of Nebraska College of Medicine	(1940)	76.1	
University of Oklahoma School of Medicine	(1940)	85	
University of Oregon Medical School	(1939) 84.7	(1940) 83	
Jefferson Medical College of Philadelphia	(1940)	81.6	
Temple University School of Medicine	(1940)	83	
University of Tennessee College of Medicine	(1940)	83.3	
Baylor University College of Medicine	(1940) 81.1	82.6	
University of Texas Faculty of Medicine	(1939)	86.6	
Medical College of Virginia	(1938)	83.1	
University of Wisconsin Medical School	(1940) 80.9	84.2	

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1931 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Cancer, New York

40:427-580 (Dec.) 1940

- Necrosis and Sarcogenesis. W. H. Woglom, New York.—p. 429.
Prevention of Spontaneous Mammary Cancer in Mice by Anterior Pituitary Hormone. W. Cramer, St. Louis.—p. 431.
Lymphoepithelioma of Parotid Gland. M. J. Fein, New York.—p. 434.
*Triple Primary Malignancy. A. L. Shapiro and H. Bolker, New York.—p. 441.
Acute Myelogenous Leukemia. J. C. Walsh, Schenectady, N. Y., and E. M. Medlar, Mount McGregor, N. Y.—p. 447.
Malignant Variant of Cystosarcoma Phyllodes. J. W. White, Scranton, Pa.—p. 458.
Fibrosarcoma of Plantar Tissues. N. C. Collins, Elgin, Ill., and W. E. Anspach, Chicago.—p. 465.
Giant Pigmented Nevus with Malignant Transformation. H. R. Fishback, Chicago.—p. 471.
Arrhenoblastoma of Ovary. A. E. Kanter and A. H. Klawans, Chicago.—p. 474.
Hemangiofibroma of Adrenal. M. E. Marten and L. M. Meyer, Brooklyn.—p. 485.

Triple Primary Malignant Growths.—Shapiro and Bolker describe a case of coexistent triple primary malignant neoplasms not previously described in the literature. Each of the three lesions demonstrated the classic picture of a characteristic neoplasm of the structure involved, namely, lymphosarcoma of the right inguinal region, clear cell adenocarcinoma of the right kidney and papillary adenocarcinoma of the pelvic colon. No distant metastases to viscera were observed from any of the tumors, despite the clearcut malignant picture and gross local invasiveness. A benign polyp of the colon and two lipomas of the forehead were also present in the same patient.

American J. Digestive Diseases, Huntington, Ind.

8:197-236 (June) 1941

- Study of Motility of Human Colon: Explanation of Dyssynergia of Colon or of "Unstable Colon." H. F. Adler, A. J. Atkinson and A. C. Ivy, Chicago.—p. 197.
Review of English Literature on Diseases of Esophagus for 1940. P. P. Vinson, Richmond, Va.—p. 202.
*Clinical Evaluation of Gastritis. C. M. Jones, Boston.—p. 205.
Woldman Phenolphthalein Test in Intestinal Tuberculosis. A. L. Kruger and H. J. Perlberg, Jersey City, N. J.—p. 209.
Epidemic of Acute Digestive Upsets of Unknown Etiology. G. M. Daek, Chicago.—p. 210.
Incidence of Fungi in Stools of Nonspecific Ulcerative Colitis. J. H. Swartz and I. R. Jankelson, Boston.—p. 211.
Inactivation of Pepsin by Compounds of Aluminum and Magnesium. M. J. Schiffrin and S. A. Komarov, Montreal, Canada.—p. 215.
Histaminase: Experimental Study. H. Necheles and W. H. Olson, with assistance of W. Seruggs, Chicago.—p. 217.
Urinary Excretion of Silica in Humans Following Oral Administration of Magnesium Trisilicate. II. In Five Patients with Peptic Ulcer and Three with Pernicious Anemia. R. R. Heffner, New Rochelle, N. Y.; R. C. Page, New York, and A. Frey, Valhalla, N. Y.—p. 219.
Proctologic Diagnostic Unit. S. Selapiro, Brooklyn.—p. 221.
*Acute Appendicitis in Middle and Late Life: Analysis of 421 Cases in Individuals Over 39 Years of Age. F. F. Boyce, New Orleans.—p. 223.

Clinical Evaluation of Gastritis.—Jones emphasizes the need for caution in giving undue importance to minor gastroscopic changes and their bearing on existing symptoms and the necessity of recognizing the important features of avitaminosis or other deficiency states. Therapy in such instances must be based on a correction of a demonstrable deficiency and only then on treatment of the stomach itself. The principles of frequent, simple feedings, adequate rest and avoidance of irritating substances are still the fundamentals by which symptoms can be relieved. Clinical and experimental studies show that atrophy of the stomach may be closely associated with various deficiency

diseases, and replacement of the lacking substances in many instances is sufficient to reverse the degenerative processes in the stomach and elsewhere in the gastrointestinal tract, with resulting regeneration of a normal or nearly normal mucous membrane. It is probable that certain cases of gastric atrophy result from chronic inflammatory disease of the gastric wall. Therefore atrophic gastric changes not only should be demonstrated but should be correlated with similar ones in the tongue and with the associated deficiency conditions.

Appendicitis in Middle and Late Life.—Boyce analyzes 421 cases of acute appendicitis in persons more than 39 years of age encountered among 4,207 acute cases at the Charity Hospital during a period of nine years. Children less than 12 and adults more than 39 years of age made up 27.5 per cent of all patients with acute appendicitis, but the deaths among them represented 53.9 per cent of the total mortality. Persons more than 39 years of age provided approximately 10 per cent of the total number of cases but 27.5 per cent of the total mortality. The mortality rose steadily in each successive decade. In the older subject appendicitis is fundamentally a vascular disease, and the initial change tends to be a massive variety of gangrene or true tissue death. The terminal circulation of the appendix lends itself particularly well to this type of pathologic change. The disease tends to spread, and a diffuse or generalized infection is frequent. The appendix is often gangrenous throughout and may be found free in the peritoneal cavity. The gangrene may spread to the mesoappendix or even to the cecum. The tissues may be so friable that sutures cut through them and hemorrhage is sometimes difficult to control. The process may go on to mesenteric thrombosis and pyelphlebitis. This type of infection is likely to be followed by thrombosis of the vessels of the abdominal wall, with resulting embolism, infarction and postoperative pneumonia. The disease tends to begin in advance of the attack, sometimes considerably in advance, with a period of vague digestive distress, which may be associated with diarrhea. The initial pain is frequently discomfort rather than acute pain. It is commonly referred to the umbilicus or the epigastrium but may be located in the pelvis. It may never localize, but if it does the process may take days. Left-sided pain is comparatively frequent. The dangerous period of calm after the appendix has ruptured or become gangrenous may last from twenty-four hours to one week or more, during which time the patient may be only mildly uncomfortable. Nausea is more frequent than vomiting, but neither may be present. In the early stages the temperature is likely to be normal or subnormal. The temperature of 70 per cent of the 421 patients was less than 100 F. The frequent presence of other diseases makes the diagnosis difficult. The first symptoms of some patients are headache, malaise, rectal hemorrhage, scrotal pain and hiccups. At operation the appendix should be removed if additional trauma is not involved; otherwise only drainage should be instituted. Anesthesia must not be too deep.

American Journal of Diseases of Children, Chicago

61:1131-1398 (June) 1941

- Infectious Mononucleosis, with Special Reference to Cerebral Complications. H. E. Thelander and E. B. Shaw, San Francisco.—p. 1131.
*Serum Therapy of Tetanus, with Special Reference to Course of Antitoxin Titers in Blood After Treatment with Specific Serum. R. Spaeth, Chicago.—p. 1146.
Course and Prognosis of Hemorrhagic Nephritis in Children. F. S. Gachet, Lakeland, Fla.—p. 1175.
IX. Roentgenographic Cephalometric Appraisal of Untreated and Treated Hypothyroidism. M. B. Engel, I. P. Bronstein, A. G. Brodie and P. Wesoke, Chicago.—p. 1193.
Development of Plantar Response in Healthy Infants. Myrtle B. McGraw, New York.—p. 1215.
Quantitative Determination of Pyruvic Acid Content of Blood in Infants and in Children: Attempt to Diagnose Subclinical Deficiency of Vitamin B₁. K. Kato and P.-K. Li, Chicago.—p. 1222.
*Exposure of Tuberculin-Sensitive Children to Exogenous Infection with Human Tubercle Bacilli. M. I. Levine, New York.—p. 1238.
Adamantinoma of Craniopharyngeal Duct: Occurrence in Child Manifesting Marked Cachexia and Dyspituitarism of Lorain Type. T. M. Conley, Kokomo, Ind.—p. 1275.

Serum Therapy for Tetanus.—Spaeth presents evidence which supports the theory that tetanus toxin circulates in the blood stream before it is finally fixed in the tissues of the central nervous system. Titration of 21 specimens of human blood serum from 14 patients with tetanus from six to forty-two days after

intravenous or intramuscular injection of from 20,000 to 100,000 American units of antitoxin suggested that usually single doses of approximately 30,000, and probably not more than 50,000, units should be adequate. Smaller doses for patients first treated after the fourth day of the disease may be feasible. However, a routine dose of 60,000 units for patients admitted to the hospital during the first five days of the disease and 40,000 units for the mildly to moderately ill patients first treated after five days is proposed. The data from titrations of specimens of blood serum obtained from 1 control subject given 30,000 units, 3 given 5,000 units and 1 given 1,500 units of tetanus antitoxin have been compared with those secured from patients with tetanus treated with from 20,000 to 100,000 units of antitoxin. The need for further study of the possible relation between the size of the dose and the degree and duration of immunity conferred is indicated.

Exposure to Tubercle Bacilli.—The value of BCG vaccination, according to Levine, was studied during the last thirteen years in 2,074 children exposed to tuberculosis. Of these 1,005 were vaccinated while 1,069 were kept as controls. The children, all from tuberculous families, were referred to the Bureau of Laboratories from various New York tuberculosis clinics and hospitals where, with rare exceptions, they were placed before 12 months of age. The control group consists of 476 children with an initially negative reaction to tuberculin who were later exposed to patients with open tuberculosis and an inoculated group of 463 children similarly exposed who became sensitive to tuberculin from vaccination with BCG. During observation a positive reaction to tuberculin developed in 93 of the 476 controls. A positive reaction to tuberculin developed within three months in the inoculated children. A comparison of the mortality rates among the two groups, which should serve to assess the potentialities of the danger that an exogenous infection will run a fatal course in a person rendered allergic to tuberculin, reveals that 4 of the children sensitized with BCG died of primary tuberculosis, whereas of the similarly exposed controls 5 died of primary tuberculosis. The admittedly limited evidence indicates that the implantation in children less than 6 years of age of exogenous tubercle bacilli on pulmonary tissue sensitive to tuberculin (owing to BCG inoculation) does not result in a more violent tissue response or an increased mortality rate. The average age at death was 12½ months. The results militate against the concept that exogenous infection with tubercle bacilli of persons already allergic to tuberculin gives rise to a more severe type of tuberculosis as judged by the frequency and severity of the lesions or by the mortality rate, regardless of the age when infection occurs.

American Journal of Psychiatry, New York

97:1261-1520 (May) 1941

- Early Behavior Problems as Signposts to Later Maladjustment L Kanner, Baltimore—p 1261
Psychiatry in General Hospital B L Hayes and R A Matthews Philadelphia—p 1272
Review of Concept of Insanity S R Warson New Haven, Conn—p 1288
Influence of Visual and Auditory Stimuli on Electroencephalographic Tracing of Petit Mal R S Schwab, Boston—p 1301
Convenient Self Administering Scale for Measuring Intellectual Impairment in Psychotics W C Shipley and C C Burlingame, Hartford, Conn—p 1313
Some Remarks on Diagnosis of the Psychopathic Delinquent J Chorniak Pittsburgh—p 1326
Rorschach Studies in Acute Experimental Alcoholic Intoxication D M Kelley and S E Barrera, New York—p 1341
Internal Environment and Behavior Part III Water Content E F Adolph Rochester, N Y—p 1365
Id Part IV Carbon Dioxide and Acid Base Balance A W Shock, Berkeley, Calif—p 1374
Some Prognostic Criteria for Response of Schizophrenic Patients to Insulin Treatment C Wall Worcester, Mass—p 1397
Blood Glycolytic Activity of Series of Mentally Normal and Mentally Ill Persons W R Tranks and L D Proctor, Toronto, Canada—p 1403
Neurometabolic Deficiency in Old Age (Senile Encephalomyelosis) E Weisberg New Orleans—p 1406
Prognosis in Drug Addiction M J Pescor, Fort Worth Texas—p 1419
Clinical Value of Hallucinations in Localizing Brain Tumors S Tarachon, New York—p 1434
Influence of Times on Teaching of Psychiatry D E Cameron, Albany, N Y—p 1443
Alcoholism Some Contemporary Opinions M Moore, Boston—p 1455

American Journal of Surgery, New York

52:395-664 (June) 1941

- Tibial Defects with Nonunion Treated by Transference of Tibial and Tibiofibular Fusion H W Meyerding and J H Cherry, Rochester, Minn—p 397
Fractures of Ribs Review of 386 Cases J F Knoepf, Shreveport, La—p 405
*Critical Appraisal of Leg Lengthening Operation B H Moore Chicago—p 415
Regional Ileitis Resume of Present Knowledge and Addition of Twenty Two Cases from Broome County, New York H Sneiderman, Binghamton N Y, and J Ryan, New York—p 424
Management of Scoliosis From Spinal New York—p 433
Guide for Internal Fixation of Intracapsular and Intertrochanteric Fractures of Femur I W Kaplan, New Orleans—p 443
*Analysis of Forty Six Cases of Actinomycosis with Special Reference to Its Etiology M I J Davis Nashville Tenn—p 447
Clinical Observations on Some Systemic Effects of Pituitrin C I Burtstein New York—p 455
Multiple Fractures of Skull Complicated by Fractures of Jaws S W Garfin, Boston—p 460
Hyperthyroidism in Elderly Patients J W Hendrick, Amarillo Texas—p 466
Review of 500 Gynecologic Patients with Urinary Symptoms S Hochman New York—p 472
Studies in Urinary Antisepsis Clinical Investigation of Mandelamine a Recently Introduced Urinary Antiseptic T J Kurwin and J P Bridges New York—p 477
Significance of Bleeding per Rectum R B Phillips Rochester N Y—p 481

Leg Lengthening Operation.—Moore appraises the end results of lengthening the shorter leg in 41 children. The cause of the shortening in 37 was poliomyelitis, in 2 epiphyseal injury from overenthusiastic manipulation of club feet, while 2 others were instances of congenital shortening. The oldest patient is now 24 years of age and his leg lengthening was done ten years ago. The poliomyelitis group was checked for five years on maintenance of length, development of deformities in the leg, changes in muscle power and the gait and function of the leg. Equalization of length by lengthening is feasible and the equality will be maintained through the period of growth at adolescence in most instances, at least in those due to poliomyelitis. The operation is not worth while for patients who do not have sufficient power to walk without a brace. Equalization of length does not improve the gait in poliomyelitis unless the gluteal muscles are powerful enough to fix the pelvis against gravity when walking and the quadriceps can extend the knee against gravity in addition to several pounds of resistance applied to the ankle. If there is any doubt as to whether leg lengthening will improve the gait, the shoe should be built up to an amount equal to the proposed lengthening and the gait observed for a week or two. In view of the difficulties of the operation and the after-care, the procedure is not worth while for less than 1½ inches of shortening. More than 3 inches of lengthening is risky owing to the danger of nerve disturbance. Correction of shortening due to an old osteomyelitis is contraindicated because of the danger of lighting up the infection and because the bone is of poor quality. Congenital shortening is a relative contraindication, and each case must be individualized. Shortening due to epiphyseal injury has not maintained the lengthening.

Actinomycosis.—According to Davis, there were admitted, from 1926 to 1936, 46 cases of actinomycosis to the University of Michigan Hospital. Of these 32 were confirmed by finding sulfur granules in the exudate from lesions, by microscopic demonstration of the ray fungus in biopsy specimens, or at necropsy. A follow up study was made of 22 patients. The patients were fairly well distributed over the state with a few from nearby states. There was no evidence of endemicity and the patients were fairly evenly distributed between the rural and urban population. Only 15 of the 46 patients were farmers, the remainder were laborers, professional men, mechanics and clerks, while 11 were unemployed. A questionnaire sent to 26 of the patients asking whether they had at any time come in contact with animals who had "lumpy jaw" or similar infections gave sixteen negative answers. Only 3 gave a history of chewing grass or straw. It is now an established fact that the causal organism of actinomycosis is an anaerobe, never found growing in the outside world. It has been cultured from the mouths of normal individuals from which typical actinomycotic infection has been subsequently produced in laboratory animals.

The biologist believes the organism of actinomycosis to be a natural inhabitant of the digestive tract, especially the mouth, where it remains as a saprophyte. Given the proper conditions of a lowered resistance and port of entry, the organism becomes pathogenic. Data from the author's cases and from collected material tend to show that the habit of chewing grass, the proximity to infected animals and special types of occupation, heretofore associated with actinomycosis, are probably present in considerably less than 50 per cent of the cases. Clinical observations suggest that the present ideas of the mode of infection of actinomycosis need to be revised. The prognosis is relatively good in the cervicofacial cases. Of 23 such patients 14 were cured, 1 died and 8 were not followed. The outlook in thoracic and abdominal cases is grave. Of 23 patients with abdominal and thoracic actinomycosis, all but 1 had died at the end of fourteen months, the living patient had active lesions in the chest at the end of one and one half years. Of those sufficiently well to leave the hospital, seven months was the average survival time. Treatment consisted of wet dressings of compound solution of iodides, iodides to tolerance, roentgen radiation and surgical drainage when indicated.

53:1-198 (July) 1941

- Surgical Correction of Mandibular Prognathism G B New and J B Erich Rochester, Minn.—p 2
Osteomyelitis of Spine Treated with Fusion by Bone Graft B Koven and M T Koven Brooklyn—p 13
Lustration of Smith Petersen Nail in Intracapsular Fractures of Neck of Femur T I Shitara, Brooklyn—p 32
*Gallbladder Surgery Ten Years Statistical Review Including 410 Operated Cases W T Doran K M Lewis E C Hanssen L C B Spier and W T Doran Jr New York—p 41
Malunited Colles Fracture M H Hobart and G L Kraft Evanston, Ill.—p 55
*Some Observations on Endometriosis R A Hurd, New York—p 61
*Multiple Primary Malignant Tumors Report of Two Cases J W White, Scranton, Pa.—p 71
*Ovarian Hemorrhage Analysis of Twenty Eight Cases from Records of Jefferson Medical College Hospital 1930 to 1939 Inclusive M A Castallo and L G Feo Philadelphia—p 82
Study of Immediate Postoperative Complications and Mortality in Certain General Surgical Operations Analysis of 662 Cases at Philadelphia General Hospital, 1936 to 1939 L K Ferguson and L W Jantowski, Philadelphia—p 88
Anatomy of Splinter of Oddi N W Thiessen Cleveland—p 94
Peripheral Arterial Occlusion G P Pennoyer New York—p 102
Uterine Prolapse X Ray Study T L Schwartz, San Diego Calif.—p 111
Total Hysterectomy J R Phillips and E Sears Houston Texas—p 117
Pruritus Ani A J Cantor Flushing N Y—p 121
Benign Papilloma of Renal Pelvis T L Senger and J J Bottone Brooklyn—p 125
Prevention of Acute Urinary Retention Following Anorectal and Perineal Surgical Procedures I Helfert Brooklyn and E Granet New York—p 129

Gallbladder Surgery—Doran and his associates followed up 410 persons with pathologic changes in the gallbladder requiring surgical procedures. Twenty-six of the patients died, a mortality of 6.3 per cent. If instances of acute cholecystitis and common duct stone are excluded, the mortality rate becomes 2.6 per cent for the 210 patients operated on during the last five years of the study. Of the entire series 222 (58 per cent) patients were followed for from six months to five years, and 105 of 149 having had chronic cholecystitis with stones were symptom free and 44 had persistent symptoms after operation. Of 39 with chronic cholecystitis without stones 16 were free from symptoms and in 23 the symptoms persisted after operation. Eighteen of the 22 patients who had had acute cholecystitis with stones were free from symptoms and 4 had persistent symptoms after operation. Only 1 of the 7 with acute cholecystitis without stones complained of pain and indigestion after operation. Two of 5 patients operated on for common duct stones have been free from symptoms.

Endometriosis—Hurd reports 135 cases in which endometriosis was the sole or predominant cause of symptoms. The 135 cases were encountered among 361 instances, but in 226 the endometriosis complicated some other more significant condition and was of little significance. The author believes that the transtubal implantation of Sampson is the most satisfactory theory. There are few situations in which metaplasia of serosal cells or growth of wolffian or muellerian rests can be offered as better solutions of the problem. Occasionally endometriosis is

found as an isolated lesion in the groin, the umbilicus, a laparotomy scar or elsewhere. Usually it is associated with or complicates some inflammatory or neoplastic condition of the uterus or its appendages or it is the factor responsible for the adhesions anchoring a retroverted uterus. The symptoms of endometriosis depend on the area involved. Dysmenorrhea, stressed by several authors as almost pathognomonic of the disease, was the sole complaint of a relatively few of the author's patients, although many stated that their symptoms were frequently aggravated at menstruation. The ratio of nongravid to gravid women was approximately 5 to 4, and only rarely did a woman seek relief solely for sterility. Radical operations gave satisfactory end results almost without exception. Radical operations are probably wiser in these than in the average gynecologic case because few of the women will ever become pregnant and because symptoms are liable to persist as long as ovarian tissue remains. The patient's age, her history, the location and extent of the disease all enter in determining the type of treatment.

Multiple Primary Malignant Tumors.—White explains the genesis of primary multiple cancers on the basis of the interaction of a functionally mature gene bearing the unit character for cancer inheritance with a functionally mature gene bearing the unit character for localization in various structures. This interaction must take place because of environmental stimuli adequate for cytogenesis. The type of neoplasia depends on the structures affected. The sequence of synchronous or metachronous tumor development depends on local environmental factors, on the persistent irritation. Each multiple cancer must be a definite, distinct, atypical and invasive new growth presenting the macroscopic and microscopic characteristics of the morphologic features of an independent cancer, the cells of each being equally capable of characteristic metastasis. Multiple cancers may be classified into (1) double malignant growths, (2) double cancers of different organs and (3) three or more malignant tumors of the same or different organs. Because of their infrequent occurrence the author reports an instance of a simultaneous involvement of the female breast and the skin of the face, and an instance of the concurrent presence of cancer in the thyroid and the lip.

Ovarian Hemorrhage.—Castallo and Feo report 28 cases of ovarian hemorrhage and suggest that the terms intraperitoneal or abdominal hemorrhage of ovarian origin, ovarian rupture causing intraperitoneal hemorrhage, acute hemorrhage from corpus luteum and graafian follicle, hemoperitoneum from ruptured corpus luteum, perforative and nonperforative ovarian hemorrhage and the like be listed under the heading oophorrrhagia. Oophorrrhagia is that condition in which there is bleeding from an ovulatory site. Review of 28 records of instances in white women fails to reveal any definite etiologic factor. Seven patients gave a history of constipation with purgation and enemas when the ovarian hemorrhage occurred. Of more significance was the fact that 18, or 64.2 per cent, of the patients were nulliparous, while 15 were single women from 15 to 25 years of age. The possibility of an endocrine imbalance seems to be suggested. Ovulation, the phases of folliculization, egg expulsion and formation of the corpus luteum are possible only when a hormone balance exists. An imbalance of this intricate and delicate mechanism may cause abnormal or pathologic sequelae, one of which may be oophorrrhagia. The onset of oophorrrhagia of 8 of the 28 patients was sudden, 13 complained of sharp abdominal pain, usually more intense and localized to the lower right quadrant, a few had periumbilical or subumbilical pain, 21 had tenderness of the lower right quadrant, 3 in the lower left quadrant, nausea occurred in 11, vomiting in 4, syncope in 3 and slight vaginal bleeding or spotting in 2. Fourteen of the patients had a pulse rate between 90 and 109, and the temperature of 24 was between 98 and 99.8 F. The respiratory rate varied between 20 and 24 per minute in 23. The blood pressure remained above 110 systolic in 22 patients, and in 16 the leukocyte count ranged between 5,300 and 9,900. The large percentage of inaccurate preoperative diagnoses reported in the literature is explainable on the basis of varied symptoms and signs. In the present series a preoperative diagnosis of appendicitis was made in 15 patients, while ovarian hemorrhage was diagnosed correctly in only 5. Other preoperative diagnoses were ectopic pregnancy and salpingitis.

Annals of Otol., Rhin. and Laryngology, St. Louis**50:317-622 (June) 1941. Partial Index**

- Nature of Cochlear Activity After Death. E. G. Wever, C. W. Bray and M. Lawrence, Princeton, N. J.—p. 317.
- Polyostotic Fibrous Dysplasia of Mastoid Complicated by Acute Mastoiditis. J. M. Robb, Detroit—p. 330.
- Sulfonamide Therapy for Acute Otitis Media and Mastoiditis. H. L. Williams, A. E. Brown, W. E. Herrell and R. D. Ralph, Rochester, Minn.—p. 336.
- The Ear in Experimental Vitamin A Deficiency. H. B. Perlman and J. Willard, Chicago—p. 349.
- Experimental Sinus Surgery. Effects of Operative Windows on Normal Sinuses. A. C. Hilding, Duluth, Minn.—p. 379.
- Unusual Tumors of Upper Respiratory Tract. L. A. Schall and D. P. Cordray, Boston—p. 421.
- Frontal Sinusitis. J. M. Brown, Los Angeles—p. 435.
- Surgery of Nasal Sinuses. E. C. Sewall, San Francisco—p. 463.
- Treatment of Acute Infections of Frontal Sinus. E. J. Mulligan and S. J. Crowe, Baltimore—p. 499.
- Management of Cavernous Sinus Thrombophlebitis. G. D. Hoople and I. H. Blaisdell, Syracuse, N. Y.—p. 503.
- Importance of Recognition of Allergic Conditions by Rhinologist. K. M. Houser, Philadelphia—p. 514.

Annals of Surgery, Philadelphia**114:1-160 (July) 1941**

- Medicine in the National Defense Program. I. Abell, Louisville, Ky.—p. 1.
- Treatment of Fresh Traumatic Wounds. M. R. Reid and B. N. Carter, Cincinnati—p. 4.
- Use of Sulfamylguanidine in Surgical Patients. W. M. Firor and A. F. Jonas, Baltimore—p. 19.
- *Pneumocectomy. F. B. Berry, New York—p. 32.
- Mortality Factors in Surgical Treatment of Ulcerative Colitis. H. W. Cave and J. E. Thompson, New York—p. 46.
- Regional Lymphatic Metastases of Carcinoma of Colon. F. A. Collier, E. B. Kay and R. S. MacIntyre, Ann Arbor, Mich.—p. 56.
- Recurrent Carcinoma of Rectum. T. S. Johns, Richmond, Va.—p. 68.
- Results with Fascia Plastic Operation for Anal Incontinence. H. B. Stone and S. McLaughan, Baltimore—p. 73.
- Arrhenoblastoma of Ovary. T. Knoch and S. J. Wolferman, Fort Smith, Ark.—p. 78.
- Carcinoma of Fundus of Uterus. G. V. Brindley, Temple, Texas—p. 90.
- Secondary Repair of Cleft Lips and Their Nasal Deformities. J. B. Brown and T. McDowell, St. Louis—p. 107.
- Why Inguinal Hernia Recurs. C. R. Robins, Richmond, Va.—p. 118.
- *Chemotherapy as Aid in Management of Acute Osteomyelitis. G. C. Penberthy and C. N. Weller, Detroit—p. 129.

Pneumocectomy.—Berry reports 18 cases of pneumocectomy. In 14 complete pneumocectomy was done and in the other 4 the subtotal intrapleural form. Complete pneumocectomy was performed in 10 cases for cancer (2 operative deaths), in 2 cases for highly infected bronchiectasis, suppurative and cystic disease (2 operative deaths) and in 2 cases for advanced chronic tuberculosis (2 operative deaths). The author deprecates the confusion in terminology and technique resulting from the loose use of the term "pneumocectomy" and suggests the more precise terms used in this digest. In cancer, pneumocectomy, if considered at all, should always be complete. Intrapleural mass ligation of the hilus is rejected. In the majority of cases of bronchiectasis, cystic disease and suppurative, because of the possibility of infection, subtotal intrapleural pneumocectomy is the safer procedure. In pulmonary tuberculosis complete pneumocectomy lessens the danger of dissemination and of persistent bronchial fistulas. The author suggests that operative mortality be clearly differentiated both as to the disease involved and whether complete or subtotal pneumocectomy was employed. Vascular anomalies of the hili of the lungs need to be recorded when encountered. The careful study of the respiratory and cardiorespiratory function of the patient after pneumocectomy will result in more intelligent postoperative guidance and treatment and help to determine whether or not thoracoplasty should be recommended following pneumocectomy.

Chemotherapy in Osteomyelitis.—Penberthy and Weller report 19 cases of acute osteomyelitis treated mostly with sulfapyridine and sulfathiazole by mouth. Except in 2 cases the primary source of infection had been from the upper respiratory tract. Cultures of the exudate from the local lesions gave *Staphylococcus aureus* in all cases save 5 and the hemolytic streptococcus in 4 of the remaining. Sulfathiazole was not more effective than sulfapyridine but better tolerated by some of the patients. Sulfathiazole was used in practically all of the cases of staphylococcal bone infection and associated septicemia. Acetylsulfathiazole crystals were observed in the urine of a

number of patients but did not give rise to symptoms. The authors believe that mortality from septicemia associated with bone infections can be considerably reduced if sulfapyridine or sulfathiazole is employed in conjunction with relatively early and adequate surgical drainage of the local lesion. The drugs were seen to aid in limiting the extent of bone destruction and deformity, in preventing secondary metastatic lesions and in influencing favorably all types of complications. Roentgenographic observations in the early acute stage of osteomyelitis are of no value in determining the diagnosis.

Archives of Dermatology and Syphilology, Chicago**43:923-1124 (June) 1941**

- Trends in American Dermatology. W. H. Guy, Pittsburgh—p. 923.
- Xanthoma Eruptivum (Xanthoma Diabeticorum). F. C. Combes and H. T. Behrman, New York—p. 927.
- Syphilis of Center of Face. H. N. Cole, J. R. Driver and H. E. Freeman, Cleveland—p. 943.
- Skin Respiration as Dermatologic Tool. J. C. Amersbach, New York, L. G. Nutini and E. S. Cook, Cincinnati—p. 949.
- *Bacterial Allergy. Etiologic Factor in Dermatitis Herpetiformis. J. L. Callaway, Durham, N. C., and T. H. Sternberg, Peoria, Ill.—p. 956.
- Diffuse Cutaneous Metastatic Lesions from Ovarian Carcinoma. E. Urbich, I. Waldow and C. J. Stamm, Philadelphia—p. 962.
- Acrokeratosis Verruciformis (Hopl). A. B. Loveman, Louisville, Ky., and P. V. Graham, Wheeling, W. Va.—p. 971.
- Neurodermatitis Treated with Hypoglycemic Reactions. S. J. Tillim and Mildred T. Squires, Amityville, N. Y.—p. 980.
- Toxic Effects of Sulfathiazole Used in Treatment of Chancroidal Infection. E. A. Glicklich and D. S. Sherman, Boston—p. 992.
- Lymphogranuloma Venereum. Report of Unusual Example Involving Lymphatic Glands of Buttock and Adjacent Regions. M. J. Costello, New York, and G. De Oreo, Cleveland—p. 997.
- Pityriasis Rosea with Lesions on Mucous Membranes. J. P. Quequerre and C. S. Wright, Philadelphia—p. 1000.
- Early Erythema and Pigmentation from Superficial Roentgen Therapy. L. H. Rosenthal, Detroit—p. 1004.

Bacterial Allergy.—Callaway and Sternberg report a case of dermatitis herpetiformis in which specific bacterial sensitization was chiefly responsible for the cutaneous aspect of the disease. The patient had had a pruritus and a vesicular eruption for six years prior to present studies, during which time all treatment was unsuccessful. Their studies revealed sensitivity to numerous bacterial allergens, to bromides and to iodides. Roentgen and bronchoscopic examination of the lungs disclosed a low grade bronchiectasis. A pure culture of pneumococcus type VII was grown from the material obtained with the bronchoscope. The patient exhibited a sensitivity to patch tests and to intracutaneous injections of the vaccine made from the pneumococci. Injections of this vaccine resulted in involution of the cutaneous lesions. Chronic bronchiectasis is still present, which may explain the necessity for continuing small doses of the vaccine. The eruption may be produced at will by withdrawal or overdosage of the vaccine. The authors feel that their observations are conclusive but do not necessarily disprove that a virus is the cause of dermatitis herpetiformis, for it is entirely possible for the virus to be present as a persisting infection kept active by an allergic or other factor.

Archives of Ophthalmology, Chicago**26:1-164 (July) 1941**

- Congenital Anomaly of Fundus Oculi. J. G. Van Manen, The Hague, The Netherlands—p. 1.
- Deep Cupping of Nerve Head in Atrophy of Optic Nerve Due to Methyl Alcohol, Complicated by Amblyopia Due to Tobacco and Ethyl Alcohol. B. Friedman, New York—p. 6.
- Dacryocystorhinostomy. Some Interesting Points on Operation. T. R. Yates, Habana, Cuba—p. 12.
- Band Shaped Opacity of Cornea Associated with Juvenile Atrophic Arthritis: Report of Case. R. T. Wong, Cleveland—p. 21.
- Retinal Hemorrhages in Newborn. H. S. McKown, New York—p. 25.
- Clinical Observations on Treatment of Squint. J. B. Feldman, Philadelphia—p. 38.
- Boeck's Sarcoid. Case of Bilateral Tumor of Lacrimal Gland. M. M. Cullom and E. W. Goodpasture, Nashville, Tenn.—p. 57.
- Aplasia of Optic Nerve. H. G. Scherle and F. H. Adler, Philadelphia—p. 61.
- Two New Visual Test Charts. H. Eggers, New York—p. 71.
- Osteitis Deformans with Angioid Streaks. Report of Case. W. H. Morrison, Omaha—p. 79.
- Blindness in the State of New York. R. L. Pfeiffer and Alice O. Booth, New York—p. 85.
- Muscle Balance Determinations at Reading Distance. J. T. Maxwell, Omaha—p. 98.
- Boeck's Sarcoid. D. Kravitz, Brooklyn—p. 102.
- Pathologic Conditions of Cornea. H. Sulzstern Proppa. B. Rorer, Washington, D. C.—p. 103.

Archives of Otolaryngology, Chicago

34:1-208 (July) 1941

- Science of Chemotherapy J A Kolmer, Philadelphia—p 1
Simple Technique for Photography of Drum Head I Hantman, Washington D C—p 7
Frontal Cells: Anatomic Study of These Cells, with Consideration of Their Clinical Significance O E Vin Alger, Chicago—p 11
Otitis and Air Cell Systems M Damm, Halmstad Sweden—p 24
Rhinitis: Nasographic Study Preliminary Report L E Silcox, Philadelphia—p 33
Senile Changes in Laryngeal Musculature A C Brich, Indianapolis, I L Lederer and R Dinolt, Chicago—p 47
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Acutely Involved Mastoid (Without Complications) Before and After Operation: Clinical and Roentgenologic Study C W Barkhorn, Newark N J—p 69
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Chronic Maxillary Sinusitis: Report of Seventy Cases in Which Resection Was Made to the Caldwell-Luc Operation J B Nail, Wichita Falls, Texas—p 99
The Larynx in the Tuberculous Patient R M Lukens, Philadelphia—p 110
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Does Heat Created by Dull Dental Burr During Labyrinthine Fenestration Inhibit Osteogenesis? M S Erner and D Myers, Philadelphia—p 121
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Significance of the pH of Nasal Secretions in Situ N D Fabricant, Chicago—p 150

Journal-Lancet, Minneapolis

61:203-252 (June) 1941

- *Simple versus Radical Mastectomy in Carcinoma of Breast C W Schoregge, Bismarck, N D—p 203
Artificial Pneumothorax in Treatment of Tuberculosis of Lungs: Its Indications and Its Complications J V Sherwood, Sanctor, S D—p 208
*Obstetric Analgesia with Sigmodal F V Emmert, St. Louis, and S G Schmidt, Chicago—p 213
Causes of Blindness in South Dakota C E Roberts, Pierre, S D—p 219
Gold Therapy in Treatment of Arthritis R C Logefell and R A Hoffman, Minneapolis—p 221
Coincident Ectopic Pregnancy and Acute Appendicitis A L Herman and W H Ford, Minneapolis—p 227
Use of Metals in Fractures J C Swanson, Fargo, N D—p 228
Nutritional Requirements in Pregnancy R J Moe, Duluth, Minn—p 230
Clinical Notes of Interstate Postgraduate Association O A Olson, Minneapolis—p 233

Treatment of Carcinoma of Breast.—Schoregge reports 73 cases of carcinoma of the breast. In 34 conservative mastectomy and in 39 the standardized radical operation was done. The plan of treatment was as follows: 1. Either simple or radical resection of the breast or breasts was done (3 women had bilateral involvement). 2. A series of roentgen irradiations was given from five to ten days, followed by another series from two to three months postoperatively. 3. Each series delivered during ten days 1,100 roentgens over the entire anterior wall of the chest of the affected side. About 500 roentgens was given to the posterior axilla and about 300 roentgens to the anterior axilla and supraclavicular areas. Palpable nodules have disappeared under this treatment. There have been some intense postirradiation reactions, such as nausea and vomiting with extreme cutaneous reactions. There was also postirradiation fibrosis of the lungs in varying degrees, fibrosis of the pectoralis muscle and lymphedema of the arm. Among the simple mastectomy group 1 patient has lived less than a year since operation, 5 for one year, 3 for two years, 5 for four years, 2 for five years and 1 for six years. Of those having radical mastectomy 1 has lived for less than one year, 2 for one year, 1 for two years, 1 for four years, 2 for five years, 3 for six years, 4 for seven years, 1 for eight years, 5 for nine years and 1 for ten years. There is a disproportion of figures because of the fact that radical mastectomy had precedence over the conservative type of treatment until five years ago. Recent follow-up has been possible for all except 4 patients in the simple mastectomy group and 3 in the radical. There were 28 deaths, 23 patients died of recurrent carcinoma and 5 died of other diseases. There was no immediate postoperative mortality. The average length of life of patients who died following radical mastectomy was twenty-four months and for the con-

servative type fifteen months. The author believes that all those patients who live for two years following conservative mastectomy will live as long as those who have been submitted to the radical procedure.

Obstetric Analgesia with Sigmodal.—Emmert and Schmidt add 350 obstetric analgesia cases to their original 200 in which delivery was performed under the new barbiturate sodium amyl-beta-biomallyl-malonyleurea (sigmodal). There were no maternal fatalities among their 550 cases nor was the morbidity increased. The fetal mortality (exclusive of macerated fetuses or fetuses dead before admission to the hospital) was 0.36 per cent, 2 babies, 1 of whom was premature. The combined use of sigmodal and additional opiates or barbiturates resulted in delayed crying and respiration in 40 infants, 15 of whom needed resuscitation. The most frequently used opiate was dilaudid. Its combination with sigmodal reduced restlessness among the last 350 to 5 instances. Interference with intensity or regularity of contractions was observed in 76, 15 of whom required solution of posterior pituitary. The latter patients had received additional doses of opiates or pentobarbital as supplementary medication. The average total time of labor for primiparas was twelve hours and four minutes, for multiparas, six hours and fifteen minutes. The authors feel, after four years of experience, that the continued use of the drug is warranted. The drug administered in recommended dosage and not given less than two hours before expected delivery has no untoward effect on mother or baby. On the basis of repeated blood examinations their opinion is that the presence of antipyrine in sigmodal does not constitute a hazard and does not predispose to granulocytopenia.

Journal of Pediatrics, St. Louis

18:709-848 (June) 1941

- Serum Protein Concentration as Guide to Treatment of Dehydration in Diarrheal Diseases E M Bridge, M I Cohen and T F M Scott, Baltimore—p 709
Vitamin Therapy in Progressive Muscular Dystrophy: Vitamin B₆, Other Factors of B Complex and Vitamin E A McBryde and L D Baker, Durham, N C—p 727
Chemotherapy of Infectious Diarrhea with Sulfathiazole E V Anderson, Pensacola, Fla—p 732
Value of Convalescent Care for Rheumatic Children L M Taran, Brooklyn—p 737
Acetarsone (Stovarsol) in Treatment of Syphilis in Infants and Children. II A Rosenbaum and H L Faulkner, Chicago—p 750
Ascorbic Acid Absorption in Infantile Diarrhea A F Abt and C J Farmer, Chicago—p 756
*Prothrombin in Newborn Infant. II Prothrombin Response to Water-Soluble Naphthoquinone Administered Intravenously. III Nature of Prothrombin in Newborn Infant S Kove and H Siegel, New York—p 764
Tetany Following Sodium Chloride Replacement Therapy: Report of Unusual Case F H Power, S Pedersen and W G Maddock, Ann Arbor, Mich—p 776
Neonatal Cortical Insufficiency (Addison's Disease) Associated with Adrenogenital Syndrome H E Thelander and Mollie Choffin, San Francisco—p 779
Periarthritis Nodosa in 9 Year Old Child M Coe, Queens Village, N Y, H A Reisman and J De Hoff, Jamaica, N Y—p 793
Acute Interstitial Myocarditis in Infant: Report of Case with Autopsy Findings J V Greenebaum, W Felson and M Seligs, Cincinnati—p 799
Actinomycosis Treated with Sulfanilamide E E Wilkinson, Nashville, Tenn—p 805

Prothrombin in Newborn Infant.—Kove and Siegel determined the time required for the initial prothrombin to be elevated in 4 newborn infants with prothrombin deficiency following the intravenous administration of a water-soluble derivative of menadione. They also tried to discover whether the prothrombin of the infant was qualitatively similar to that of the normal adult. In all cases, regardless of the degree of hypoprothrombinemia, there was a definite prothrombin response within two hours of intravenous naphthoquinone therapy. The latent period varied from half an hour to two hours. This latent period was not related to the initial degree of prothrombin deficiency. Following this latent period the first response was associated with a sharp drop in the prothrombin clotting time in the infants with initial high clotting times. The effect following the initial response appeared to depend on the degree of prothrombin deficiency. Study of the nature of the prothrombin of newborn infants suggests that it is qualitatively similar to that of the normal adult and that this similarity exists irrespective of the original concentration or source of the prothrombin and regardless of the presence or absence of hypoprothrombinemia.

Journal of Urology, Baltimore

45:795-936 (June) 1941

- Bilateral Renal Ectopia: Report of Four Additional Cases. H. A. Fowler, Washington, D. C.—p. 795.
- Surgery of Inferior Vena Cava in Urologic Conditions. A. Hyman and H. E. Leiter, New York.—p. 813.
- Postcaval Ureter. J. DeCarlo, Philadelphia.—p. 827.
- Incomplete Duplication of Ureter, with One Ending Blindly. W. L. Grantham and R. C. Bunts, Asheville, N. C.—p. 832.
- Cystitis Cystica: Bacteriologic Studies in Series of Twenty-Eight Cases. W. D. Warrick, Chicago.—p. 835.
- Neurogenic Bladder in Diabetes Mellitus: Early Recognition and Treatment with Report of Cases. A. Rudy and S. R. Muellner, Boston.—p. 844.
- Primary Tuberculosis of Prostate: Report of Case. G. W. Strom and G. J. Thompson, Rochester, Minn.—p. 858.
- Influence of Reticuloendothelial System on Internal Secretory Activity of Transplanted Ovaries in Rat. A. J. Miller and A. K. Lampton, Louisville, Ky.—p. 863.
- Influence of Hormones on Development of Reproductive System. C. R. Moore, Chicago.—p. 869.
- Factors in Stability and Variability of Semen Specimens: Observations on 640 Successive Samples from Twenty-Three Men. R. S. Hotchkiss, New York.—p. 875.
- Reminiscences of Early Experiences in Urology in New York City. C. L. Begg, New York.—p. 889.
- New Table for Cystoscopy, Fluoroscopy and Roentgenography. D. M. Davis, Philadelphia.—p. 894.
- *Sulfacetimide: Toxicity and Efficacy in Gonorrhea and Urinary Tract Infections: Preliminary Report. H. H. Young, Justina H. Hill, H. J. Jewett and R. W. Satterthwaite, Baltimore.—p. 903.

Sulfacetimide for Gonorrhea.—Young and his collaborators administered sulfacetimide (*p*-amino-benzene-sulfonyl-acetyl-imide) to 105 patients with urinary infections. The patients received daily from 4 to 12 Gm. for from two to forty-three days. Fifty-one of the patients had gonorrhea, 10 chronic urethritis, 29 urinary infections and 15 miscellaneous conditions. Sulfacetimide levels of free drug in urines from patients ranged from 27.7 to 157.5 mg. per hundred cubic centimeters, the mean level being 62 mg. The drug was discontinued in 29 of the 51 patients because they were free from symptoms or because the urethral discharge failed to stop. In 3 of the 29, the gonococcus was present in cultures of the prostatic secretion even after the discharge had ceased. Of the 29, 15 patients are free from symptoms and have had at least one negative prostatic secretion and culture or have shown no recurrence after one or more provocative tests. In the remaining 14 patients the drug was ineffective. Unless the patient responded within four days, the drug was stopped. The other 22 patients failed to return after the discharge ceased or are still under treatment. Sulfacetimide for gonorrhea does not appear to be as successful as sulfathiazole, but its lower toxicity may warrant its trial for patients who are sensitive to other sulfonamides. For the 29 patients with infections of the urinary tract the daily dose of sulfacetimide for two or three weeks was 4 Gm. after an initial dose of 3 Gm. Fifteen patients have completed their course of therapy and 14 have lapsed or are still under treatment. In 7 of the 15, treatment was successful. The infecting organism of 5 was *Escherichia* or *Aerobacter*, a mixed infection including *Proteus*, and of 1 it was a gram-negative bacillus of the influenza group. Of the 8 failures there were toxic reactions in 2 and the drug was stopped, and in the other 6 a mixed infection was present. The patients given daily doses of 4 Gm. of the drug had no headaches or general malaise. A daily dose in excess of 6 Gm. usually was followed by some reaction. Larger doses do not appear to increase the efficacy of the drug.

Kansas Medical Society Journal, Topeka

42:237-280 (June) 1941

- Gynecologic Management of Barren Marriage. G. H. Gardner, Chicago.—p. 237.
- Thyroid Death. C. A. Hellwig, Wichita.—p. 242.
- Full Term Abdominal Pregnancy with Living Mother and Child. M. J. Renner, Goodland.—p. 245.
- Recovery Following Streptococcal Septicemia. K. E. Voldeng, Wellington.—p. 248.
- Management of Dental Program for Children During Growth Period. L. R. Kramer, Topeka.—p. 249.
- History of Blood Transfusions. W. J. Kiser, Wichita.—p. 250.
- Cardiac Metastasis from Carcinoma of Thyroid. W. A. Grosjean and C. D. Snyder, Winfield.—p. 253.
- Pseudomucinous Cystadenoma. L. A. Calkins, Kansas City, and O. H. True, Hays.—p. 255.

Medical Annals of District of Columbia, Washington

10:205-252 (June) 1941

- "Stand By!" D. L. Borden, Washington.—p. 205.
- Some Mental Problems of Aging and Their Management. Winfred Overholser, Washington.—p. 212.
- Practical Therapy with Vitamin K: Simple Reclassification of Hemorrhagic Diseases Due to Deficiency of Blood Prothrombin. A. M. Grossman, Washington.—p. 218.
- Physical Therapy in Treatment of Rheumatoid Arthritis and Osteoarthritis. I. Levin, Washington.—p. 225.
- Further Experiences with Mapharsen in Syphilis: Report of Fatality. G. W. Creswell and G. B. Roth, Washington.—p. 230.

Minnesota Medicine, St. Paul

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- Gynecologic Malignant Disease: Some Problems in Treatment. J. L. McKelvey, Minneapolis.—p. 433.
- Bronchiogenic Carcinoma. E. J. Simons, Swanville.—p. 438.
- Bone Marrow Biopsy. R. Heibel, Minneapolis.—p. 442.
- Pneumonia in Duluth During 1939-1940. W. D. Coventry, Duluth.—p. 450.
- Attempt to Prevent Postoperative Pneumonia with Respiratory Vaccine. W. J. Tennison, J. A. Bargen and H. G. Wood, Rochester.—p. 454.
- *Burbot Liver Oil in Treatment of Various Dermatoses. J. F. Wilson, Philadelphia.—p. 456.
- Colocentesis—A Glimpse of the Surgical Past. C. D. L. Cromar and C. W. Mayo, Rochester.—p. 458.

Burbot Liver Oil in Treatment of Various Dermatoses.—Wilson used an ointment containing 80 per cent of burbot liver oil for the treatment of 33 patients with varicose ulcers, 7 with *ecthyma vulgaris*, 3 with indolent ulcers following surgical procedures and 4 with psoriasis. The patients with varicose ulcers ranged in age from 50 to 71 years and had suffered from recurrent stasis ulcers for from ten to forty-seven years. In view of their great individual differences accurate evaluation is difficult, but all the patients improved rapidly with the use of the ointment. Other measures were used to improve the circulation, but improvement occurred while the ointment was being used. Four patients suffered an exacerbation of a dermatitis at the border of the ulcer where the ointment came in contact with the skin. This healed quickly when the application was limited to the ulcerated area. The ulcers of the 7 patients with severe *ecthyma vulgaris* of the lower extremities healed rapidly. Two of the patients with psoriasis improved but later relapsed. The 3 ulcers following surgical procedures had been slow in healing, but following the ointment therapy improvement and healing were rapid.

New Jersey Medical Society Journal, Trenton

38:297-342 (June) 1941

- Hyperinsulinism. L. G. Rountree, Philadelphia.—p. 301.
- Cardiovascular Disturbances in Gastrointestinal Diseases. C. L. Andrews, Atlantic City.—p. 303.
- Occurrence and Treatment of Spontaneous Traumatic Pneumothorax in Bilateral Artificial Pneumothorax. M. J. Fine, Newark.—p. 308.
- Inclusion Blepharitis. H. D. Barnshaw, Camden.—p. 312.

Ohio State Medical Journal, Columbus

37:513-608 (June) 1941

- Pneumonia Studies: Five Years' Experiences. J. E. Benjamin and J. M. Ruegger, Cincinnati.—p. 529.
- *Ligation of Patent Ductus Arteriosus. P. W. Gebauer and A. D. Nichol, Cleveland.—p. 538.
- Hydatidiform Mole: Report of Case. A. Piraino, Oberlin.—p. 544.
- Usefulness of Gonadotropic Substances in Treatment of Sterility of Endocrine Origin. J. C. Burch and O. Wright, Nashville, Tenn.—p. 546.
- Role of Eye in Autonomic Nerve Imbalance. G. S. Lanikin, Sardinia.—p. 549.
- Amniotic Hernia Containing Entire Liver, Gallbladder, Large and Small Bowel. G. J. Searle Jr., Mansfield, and J. Engmore, Mount Gilead.—p. 551.
- *Treatment of Angina Pectoris and Coronary Artery Disease with Sex Hormones. R. W. Bonnell, C. P. Pritchett and T. E. Rardin, Columbus.—p. 554.
- Extensive Ameloblastoma. W. F. Ashe and R. Johannmann, Cincinnati.—p. 557.

Ligation of Patent Ductus Arteriosus.—Gebauer and Nichol report 3 instances of ligation of the patent ductus arteriosus; the ages of the patients were 39, 14 and 11 years, respectively. The following tentative conclusions are presented: Operation should be performed early because children withstand

thoracic surgery much better than adults, when the operation is technically easier and the postoperative reaction is less severe. Early intervention should be preceded by a period of observation long enough to preclude the rarity of spontaneous closure. Such patients may be forced to inactivity by a diminished cardiac reserve and throughout life are distinctly more susceptible to bacterial endocarditis, aneurysm and rupture of the ductus, thrombus formation and cardiac failure. Exploration in later (adult) life should be most cautious and in some instances should be abandoned rather than to attempt to dissect around something which has ceased to exist.

Treatment of Angina Pectoris and Coronary Artery Disease.—Bonnell and his colleagues used preparations of sex hormones in the treatment of 23 patients having heart disease; 21 of the patients had angina pectoris with cardiac pain as the cardinal symptom, 1 had extreme weakness and exhaustion following an acute coronary occlusion, and 1 hypertensive arteriosclerotic heart disease, congestive heart failure and cardiac asthma. Five men received androgen only, 11 estrogens alone and 2 both substances. All the women were treated with estrogen. The dose of estrogen varied from 2,000 to 10,000 international units given two or three times a week, and then the dose was decreased gradually or the interval between injections was increased. The initial dose of androgen varied from 3 to 5 capon units. After the treatment improvement was noticed in 22 of the 23 patients. Four men and 2 women had complete relief from symptoms while being treated, 5 men had excellent relief but had occasional mild pains, and 8 men and 3 women had a good result; that is, there were definitely fewer anginal attacks and exercise tolerance was increased but they continued to experience mild anginal attacks. Fatigue and dyspnea when present were benefited in the same proportion as was the anginal syndrome. Improvement of patients is evidently due to a vasodilating property of the hormone preparations on the coronary circulation.

Surgery, St. Louis

9:657-824 (May) 1941

- *Early Operative Treatment of Acute Hematogenous Osteomyelitis. J. A. Key, St. Louis.—p. 657.
- *Delayed Operative Treatment of Acute Hematogenous Osteomyelitis. J. C. Wilson, Los Angeles.—p. 666.
- Fibrosarcoma of Soft Parts of Extremities. S. A. Ziemian, Chicago.—p. 675.
- Blood Supply of First Part of Duodenum, with Description of Gastro-duodenal Plexus. H. A. Wilmer, Minneapolis.—p. 679.
- Repeated Perforations of Peptic Ulcers. R. Cohn, San Francisco.—p. 688.
- Experimental Studies on Alimentary Azotemia: I. Role of Blood Absorption from Gastrointestinal Tract. C. F. Chunn and H. N. Harkins, Detroit.—p. 695.
- Studies on Pancreatitis: Observations on Disappearance of Experimentally Increased Blood Amylase and Lipase. H. L. Popper and F. Plotke, Chicago.—p. 706.
- Two Stage Resection of Carcinoma of Ampulla of Vater. R. B. Moreland and B. S. Freeman, Hines, Ill.—p. 712.
- Surgical Masks: Experimental Study. J. W. Hirshfeld and P. J. Laube, New Haven, Conn.—p. 720.
- Method to Facilitate Prompt Recognition of Esophageal Diverticulum at Time of Operation. S. Israel, Houston, Texas.—p. 731.
- Incidence of Appendectomy in Four Unrelated Population Groups. R. E. Buirge, New Hampton, Iowa.—p. 733.
- Surgical Significance of Abdominal Wall Pain. D. W. Smith, Miami, Fla., and W. Bates, Philadelphia.—p. 741.
- *Surgery in Carotid Sinus Syndrome. J. H. Mulholland and E. A. Rovenstine, New York.—p. 751.
- Spontaneous Cerebral Hemorrhage: Surgical Treatment of Selected Cases. L. T. Finlow, A. D. Carr and C. Wattenberg, St. Louis.—p. 758.
- Acute Trochanteric Bursitis with Calcification. A. J. Schein and O. Lehmann, New York.—p. 771.
- Role of Estrogenic Substances in Production of Malignant Mammary Lesions, with Report of Case of Adenocarcinoma of Breast, Possibly Induced by Sirennous Estrogen Therapy. W. H. Parsons, Vicksburg, Miss., and E. F. McCall, Augusta, Ga.—p. 780.

Hematogenous Osteomyelitis.—Key points out that a patient suspected of having acute hematogenous osteomyelitis presents a surgical emergency. On entrance to the hospital he should be given a full dose of sulfathiazole by mouth or sodium sulfathiazole intravenously. If he is exhausted and dehydrated he should be given ample sedation and intravenous fluids. If

extreme toxicity exists he should be given a large dose of staphylococcus antitoxin, the extremity should be immobilized and the patient should be put at rest for a few (usually eight to twelve) hours or until the dehydration and exhaustion is corrected. He should then be operated on. The suspected bone should be exposed by the most direct route and the incision should be ample. Whether or not pus is encountered after the periosteum is incised, the medulla should be opened. A sudden decrease in the intramedullary pressure should be avoided. The operation is only for drainage, and infected and necrotic bone should not be removed. If the medullary cavity is involved extensively, and the patient's condition is good, a relatively long window is made in the cortex. After hemostasis has been effected, the wound is sprinkled generously with powdered sulfathiazole and packed loosely with petrolatum gauze and the extremity is immobilized. Postoperatively the patient is given intravenous fluids, repeated small transfusions, if indicated, and large doses of antitoxin for as long as the nonsegmented leukocytes are increased. The author believes that early operation, even though a normal bone may be opened occasionally, will not only decrease the mortality but prevent much chronic osteomyelitis and lessen the number of joints destroyed. The most effective measures for the prevention of chronic osteomyelitis with its resultant crippling are early diagnosis and prompt and effective drainage. Patients less than 2 years of age are similarly treated, but the operation is delayed until an extraosseous abscess appears. The latter is drained but the bone is not disturbed. As the bones of infants are porous, the part that becomes necrotic tends to be absorbed without sequestration. About half of the cases in infants are caused by streptococci, and such infection tends to heal without sequestration. Vaccines and toxoid cannot be expected to help an acute infection. To give an acutely ill patient vaccine or toxoid is to attempt to stimulate an exhausted defense mechanism by adding a burden to it. Bacteriophage appears to be without clinical effect. Serums may prove to be of great value, but even with their use early drainage is advisable.

Delayed Operative Treatment of Hematogenous Osteomyelitis.—Wilson analyzes 33 cases of acute hematogenous osteomyelitis admitted to the orthopedic wards of the Children's Hospital since 1935. The acuteness of the onset of the disease, with a severe constitutional reaction, and, as a rule, a bacteremia are proof of a general infection. The infecting bacteria are blood borne from a focus. Patients with clinical signs of acute osteomyelitis have shown progressive roentgen evidence of the disease, although the constitutional symptoms seemed to abate more rapidly under the influence of sulfonamides. However, these drugs should not be administered until the type of infecting organism is determined. Sulfanilamide and sulfathiazole may be considered valuable agents in that they help to stay the hands of the surgeon for a short time while protective forces are mustered. Twenty-three of the 33 patients gave a definite pre-osteomyelitic history of furuncles, urinary infection, blisters, splinters, scratches, impetigo, otitis media, chickenpox or laryngitis. Twenty-two had single diffuse lesions and 11 had more than one diffuse lesion. No patient had more than one metastatic lesion. Hemolytic *Staphylococcus aureus* was the infecting organism in 19, *Staphylococcus aureus* in 8, the beta hemolytic streptococcus in 3, the alpha hemolytic streptococcus in 1, and mixed alpha and beta streptococci in 1; hemolytic *Staphylococcus citreus* was recovered in pure culture in 1. Organisms were recovered from the blood stream of 19 patients. Eight patients were operated on during the first seven days of their illness; in 5 of these no metastatic lesions developed, in 3 one metastatic lesion developed and 2 of the 8 patients died following drainage. Operative drainage was instituted between the seventh and fourteenth days of the illness in 18 patients; 11 had no metastatic lesions and 7 had one metastatic lesion. There were no deaths among these patients nor were there any deaths among the 3 patients whose abscesses were drained between the fourteenth and twenty-first days of their illness. Two of the latter had no metastatic lesions and 1 had one metastatic lesion. Spontaneous rupture occurred in 3 of the 4 patients whose lesions were not drained, and 1 died twenty-four hours after admission with osteomyelitis of the tibia and well developed bronchopneumonia. Bone

infections of 17 patients are now healed, drainage from the infected bone of 8 still persists but the patients' general condition is good, and 5 patients could not be traced. The author concludes that the surgeon should not be stampeded into an inexpedient operation simply because an abscess develops within the substance of a bone of a patient with septicemia.

Surgery for the Carotid Sinus Syndrome.—According to Mulholland and Rovenstine, surgical denervation of the hyperactive carotid sinus has been carried out on 5 patients at Bellevue Hospital. One side was always more sensitive, and this side was denervated. Before operation further diagnostic tests are made by blocking the sinus nerve with 10 cc. of a 1 per cent solution of procaine hydrochloride injected in the region of the bifurcation of the carotid artery. When the nerve to the carotid sinus is blocked, pressure over the bulb will not produce any symptoms.

Surgery, Gynecology and Obstetrics, Chicago

73:1-128 (July) 1941

- Joint Débridement: Surgical Treatment of Degenerative Arthritis. P. B. Magnuson, Chicago.—p. 1.
- Effect of Stored Citrated Blood Transfusions on Patients with Hypoprothrombinemia. J. E. Karabin, H. Udesky and L. Seed, Chicago.—p. 10.
- Basis of Histologic Diagnosis of Carcinoma, with Special Reference to Carcinoma of Cervix and Similar Lesions. R. Meyer, Minneapolis.—p. 14.
- *Management of Jaundiced Patient, with Special Reference to Vitamin K. F. A. Collier and J. M. Farris, Ann Arbor, Mich.—p. 21.
- Classification of Gastric Carcinoma. R. Schindler, P. E. Steiner, W. M. Smith, Chicago, and M. E. Dailey, San Francisco.—p. 30.
- *Prevention of Postoperative Pneumococcus (Type I) Pneumonia by Means of Prophylactic Use of Sulfapyridine: Experimental Study. L. A. Hochberg, B. B. Hershenon, L. Winkelman and D. Rivkin, Brooklyn.—p. 40.
- Gastrostomy in Cases of Carcinoma of Esophagus. R. H. Sweet, Boston.—p. 55.
- Distant Metastasis in Cancer of Upper Respiratory and Alimentary Tracts. R. R. Blaufox and H. E. Martin, New York.—p. 63.
- Bacterial Contamination of Wounds, from Air, from Skin of Operator and from Skin of Patient. J. W. Hirschfeld, New Haven, Conn.—p. 72.
- *Beneficial Effects of Oxygen Therapy in Experimental Traumatic Shock. J. G. Schnedorf and T. G. Orr, Kansas City, Kan.—p. 79.
- Twelfth Rib Incision as Approach to Kidney. K. H. Digby, Hong Kong, China.—p. 84.
- Hormone Studies in Presence of Hydatidiform Mole and Choriocarcinoma. F. L. Payne, Philadelphia.—p. 86.
- Split Vermilion Bordered Lip Flap. B. Cannon, Boston.—p. 95.
- Molybdenum Steel Lag Screw in Internal Fixation of Fractured Neck of Femur. F. A. Lorenzo, Punxsutawney, Pa.—p. 99.
- Perforated Ulcer of Ileum Opposite Meckel's Diverticulum. W. G. Maddock, Ann Arbor, Mich., and M. B. Coventry, Rochester, Minn.—p. 105.
- Treatment of Tuberculous Cavities. C. R. Lavalley, Buenos Aires, Argentina, South America.—p. 108.
- Perforation of Pancreatic Pseudocysts: Report of Six Cases. J. D. Koucky, W. C. Beck and M. C. Todd, Chicago.—p. 113.
- How Does a Colostomy Afford Protection Against Peritonitis from Subsequent Operations? C. E. Rea, Minneapolis.—p. 120.

Vitamin K for Jaundice.—Collier and Farris administered vitamin K or one of its related compounds to patients in the general surgical services for the last eighteen months in order to prevent postoperative bleeding in jaundiced patients. At the University Hospital the test for determination of the amount of prothrombin present is employed exclusively because of its easy performance. It is an excellent clinical test of a patient's tendency to bleed, and its results check well with those obtained by more complicated methods. The bleeding tests of Duke and Ivy are not to be relied on for detecting hypoprothrombinemia, as they may give normal values when a test of prothrombin activity will show that the patient is in imminent danger of hemorrhage. The only true indication for vitamin K therapy is a lowered prothrombin blood level. Vitamin K for menorrhagia, metrorrhagia and essential hematuria is wasted therapy. Prothrombin, like other serum proteins, is supplied by the liver and therefore a prothrombin test is a test of hepatic function and parallels other tests as an index of hepatic dysfunction. The therapeutic requirement is to restore the patency of the biliary ducts and to protect the hepatic parenchyma. Repeated administration of fluids intravenously in the presence of hemorrhage and the continued aspiration of bile from the gastrointestinal tract by means of the Wangenstein suction apparatus require that the prothrombin clotting activity be determined.

To attain the therapeutic objective a high protein and carbohydrate diet should be given. Attention to other vitamin needs will enhance the state of general nutrition, cardiac reserve (vitamin B), resistance to infection (vitamins A and D) and wound healing (vitamin C). Difficult surgical procedures can be successfully carried out only if bleeding is controlled, especially in jaundiced patients.

Sulfapyridine to Prevent Pneumonia.—Hochberg and his co-workers subjected dogs to the following three procedures, with from three to four weeks between the procedures: (1) a simple abdominal laparotomy with manipulation of the viscera, (2) a simple gastrostomy with previous sulfapyridine therapy and postoperative intrabronchial insufflation of a virulent culture of pneumococci and (3) an intrabronchial insufflation of a similar culture in an animal not previously treated with sulfapyridine. From an analysis of the hematologic and blood gas studies the authors observed no apparent contraindication to the use of sulfapyridine in the prophylaxis of postoperative pneumonia. In the experimental animal the blood constituent changes and oxygen supply following the prophylactic use of sulfapyridine are not much different from those of animals having a smooth and uneventful postoperative course. The concentrations of sulfapyridine in the blood before operation varied between 4.1 and 8.2 mg. per hundred cubic centimeters. Half an hour after operation these concentrations were between 5.9 and 8.3 mg., and four hours after operation they were between 6.2 and 8.9 mg. per hundred cubic centimeters of blood. On the first day after operation and about fifteen hours after insufflation of the culture into the bronchi the blood levels averaged 8.6 mg. In 1 animal in which the sulfapyridine was omitted the night before the gastrostomy was performed, the postoperative blood levels were essentially the same. Postoperative pneumonia developed in only 1 animal; the disease was benign and the animal made a complete recovery.

Oxygen Therapy in Experimental Shock.—Schnedorf and Orr report the effect of oxygen inhalation on experimental traumatic shock in 20 dogs given pentobarbital sodium; 10 breathing atmospheric oxygen served as controls and 10 were treated with 100 per cent oxygen. While the degree of trauma indicated by the fluid loss into the traumatized limb was the same in the 20 dogs, the average life of the control dogs was four and five-tenths hours and of those treated with oxygen it was seven and seven-tenths hours. The blood pressure of the dogs treated with oxygen was higher four, six and eight hours after the trauma than that of the untreated group. In the treated dogs the arterial oxygen saturation was maintained around 92 per cent throughout. Study of the oxygen content of arterial and venous blood shows that oxygen therapy can significantly elevate the oxygen content and saturation even in the presence of a slowed circulation in shock. These studies correlate those of Aub and Cunningham, and of Wood, Mason and Blalock. The resistance to a fall in blood pressure and the increased length of life of the treated dogs demonstrate the beneficial action of oxygen inhalation in the treatment of experimental traumatic shock. Capillary dilatation or hemorrhage in the intestine and edema of the viscera and of the lungs, as described by Moon and Blalock in their dogs, was not present in any of the authors' animals. At necropsy the intestine was blanched; the liver and particularly the spleen were contracted, suggesting loss of blood volume.

West Virginia Medical Journal, Charleston

37:289-336 (July) 1941

- Hallux Valgus. R. L. Anderson, Charleston.—p. 289.
- Plastic Surgery of Nose and Face. E. D. King, Cincinnati.—p. 293.
- Sympathetic Block in Treatment of Thrombophlebitis. J. W. Carney, Logan.—p. 298.
- Wizard Hands (Tribute to Francis T. Stewart, M.D.). F. E. Keller, Philadelphia.—p. 300.
- Report of Poliomyelitis Epidemic in West Virginia Public Health District No. 2. H. Duncan, Lewisburg.—p. 303.
- Population Trends, with Special Reference to West Virginia. S. L. Galpin, Morgantown.—p. 306.
- Perineal Repair with Cotton and Postoperative Sitz Baths. A. P. Hudgins, Charleston.—p. 309.
- Sterility Studies in Women. E. J. Humphrey, Huntington.—p. 311.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

38:59-90 (April-June) 1941

Dystrophia Myotonica in Infants and Children O Maas —p 59

British Journal of Dermatology and Syphilis, London

53:171-200 (June) 1941

Treatment of Postradiation Necrosis by Radiation Therapy. A Eidinov —p 171.

New Preparation of Metallic Oxides with Dehydrating and Antiphlogistic Effects on Skin H C Simon and F. Herrmann —p 177

Syphilis in Saint Simon's Memoires J D Rolleston —p 183

"Pemphigus Solitarius Cicatricans" T Davies —p 187

British Journal of Radiology, London

14:187-218 (June) 1941

Preliminary Observations on Quantitative Examination of Human Biopsy Material Taken from Irradiated Carcinomas A Glucksmann —p 187

Physical Investigations with 140 Kilovolt Radiation L F Lamerston —p 199.

Role of Mass Radiography in Tuberculosis G Jessel —p 206

Primary Carcinoma of Jejunum: Case Report W J Craig —p 210

Research into Physical Factors Concerned in Indirect Radiography

Part III Simple Method of Detecting Experimentally the Presence

of Phenomenon of Latent Image Reinforcement in Fluorescing Screen

B Stanford —p 213

Right Sided Aorta. A Hope Gosse —p 215

British Medical Journal, London

1:877-916 (June 14) 1941

Bacteriologic Investigation of Wounds Treated by Closed Plaster Method

J Orr Ewing, J C Scott and A D Gardner —p 877

Diabetic Coma in Series of Young Diabetics L Cole —p 882

Differential Diagnosis of Contusion of Brain and Psychoneurosis

W A Brend —p 885

Sulfonamide Treatment of Hypopyon Ulcer of Cornea I L Johnstone.

—p 887.

Calculation and Prescribing of Infants' Feeds II Neonatal Period.

Practical Points in Regulation of Feeds in Maternity Hospitals and

Homes. Helen M. M. Mackay. —p 888

1:917-952 (June 21) 1941

Some Problems of Miniature Mass Radiography J V Sparks —p 917.

Tuberculosis in Recruits S H Graham and M Davies —p 920

Trichlorethylene as Inhalation Anesthetic C L. Hewer, with prepara-

tory note by C F. Hadfield —p 924

Use of Sulfapyridine in Subacute Bacterial Endocarditis, with Report of

Case. J. G Macleod —p 927

Hyperventilation Tetany in Tropical Climates A. Wingfield —p 929.

1:953-992 (June 28) 1941

Reduction of Dust Borne Bacteria in Air of Hospital Wards by Liquid

Paraffin Treatment of Bedclothes J C Thomas and M. van den

Ende —p 953

Recent Experiences in Treatment of Gonorrhea in the Male R M.

B MacKenna —p 958

*Acute Gonorrhea Further Observations on Treatment by Sulfapyridine

Followed by Lavage J Sommerville —p 961

*Surgical Treatment of Congenital Pyloric Stenosis D Levi —p 963

Ophthalmic Casualties Resulting from Air Raids Dorothy R Campbell.

—p 966

Acute Gonorrhea.—Sommerville describes the results obtained in 300 consecutive cases of acute gonorrhea treated with sulfapyridine followed by lavage. Dosage consisted of 0.5 Gm. of sulfapyridine four times a day for one week, followed by lavage for two weeks. Toxic effects were noted in 13 per cent of the cases, none of which were serious. Complications arising after treatment occurred in 5 (1½ per cent); an exciting cause was demonstrable in 4 of these. In only 1 (0.33½ per cent) case did the drug fail to prevent a complication. Relapse was observed in 20 cases (6½ per cent); alcoholism was admitted in 15 and almost certainly present in 2 others. In 3 cases (1 per cent) relapse occurred for no apparent reason.

Congenital Pyloric Stenosis.—Levi reports a series of 100 consecutive operations on breast fed infants (87 boys, 13 girls) for pyloric stenosis, with a 100 per cent cure. A similar series of 46 operations on bottle fed infants resulted in 5 deaths from gastroenteritis. The author discusses the practical implications of the striking difference in mortality from pyloric stenosis in breast and bottle fed infants. A child seems to lose its immunity to gastroenteritis if once it is taken off the breast.

If the mother is well the infant should continue to be breast fed until the presence of pyloric stenosis is definitely excluded. It should be regarded as axiomatic that breast milk never disagrees with an infant, and students, nurses, midwives, welfare and social workers should be so taught. Gastroenteritis is to be feared in infants with pyloric stenosis whether medically or surgically treated. Its risk is proportionate to the duration of hospital treatment. Surgical treatment, requiring hospitalization for only a week, lessens the danger. The author points out that statistics comparing medical and surgical management of pyloric stenosis are worthless unless accompanied with information as to the method of feeding employed.

Edinburgh Medical Journal

48:361-432 (June) 1941

Detecting Pelvic Contractions. J C Moir —p 361.

Orthopedics. Brief Survey of Its Position W. A. Cochrane —p 379.

Report on Six Obsessional Cases Berta Andratschke —p 394.

Studies on Stored Blood. VII. Effect of Sodium Sulfapyridine, Albucl

Soluble and Hydrogen Ion Concentration on Phagocytosis. J. W.

Czekałowski —p 405

Sudden Blindness Following Gastrointestinal Hemorrhage C K.

Robertson —p 414.

Journal of Mental Science, London

87:313-476 (July) 1941

*Incidence of Conjugal Neurosyphilis. E L Hutton —p 313.

Contribution of the Rorschach Method to Clinical Diagnosis. W. D.

Ross —p 331.

Fatigue and Effort Syndrome. E Guttmann and H Rimoldi —p 349

Treatment of Emotional Problems in Childhood W H. Whiles —p 359.

Mental Sequelae of Head Injury. H A Palmer —p 370

Psychogenic Episodes in Course of Major Psychoses. E W. Anderson

and W P Mallinson —p 383.

Survey of Skin Testing, with Observations on Suggested Method in

Epileptics D C Dewar —p 397

Convulsion Therapy in War Psychoneurotics R Good —p 409

Self Governed Patients' Social Club in Public Mental Hospital.

J Bierer and F P Haldane —p 419

Observations in Hypoglycemia II. Blood Sugar and Consciousness.

W Mayer Gross and T Berliner —p 427

Arachnodactyly (Dolichostenomelia of Marfan) E C Dax —p 434

Conjugal Neurosyphilis.—Hutton endeavored to determine the incidence of neurosyphilis among the conjugal consorts of 492 female patients with dementia paralytica treated at the Malaria Therapy Centre at Horton between 1925 and 1939. Evidence for or against syphilis was obtainable for only 154 men, and of these 76 had negative Wassermann reactions and 78 had contracted the disease. Of the 78, 4 have had primary or secondary syphilis, 11 tertiary syphilis, 10 latent syphilis, 37 neurosyphilis and 16 a history of having acquired syphilis but the source of their infection is sketchy. It is seen that the incidence of neurosyphilis is much higher than that of tertiary syphilis among the conjugal partners of these women. The observations support the theory of a neurotropic strain. As the contagious period of syphilis appears to be relatively short, those conjugal partners whose relationships are instituted outside this period remain free from infection although cohabiting with a syphilitic spouse. The author believes that the incidence of conjugal neurosyphilis is sufficiently high to warrant the adoption of routine measures for investigating all marital partners of neurosyphilitic persons and to institute prophylactic treatment to all those with latent asymptomatic neurosyphilis so found.

Journal of Pathology and Bacteriology, Edinburgh

52:283-412 (May) 1941

Diphtheria in Liverpool During Years 1937-1940 II D Wright —

p 283.

Studies on Toxin of *Corynebacterium Pyogenicum* R Lovell —p 295

Cellular Changes in Spleen and Lymph Glands in Mice Used for Car-

cinogetic and Related Experiments, with Special Reference to Giant

Cells of Spleen. L Dorothy Parsons and F L Warren —p 305

Growth of Blood of Sucking Mouse II Gruneberg —p 323

Observations on Autohemolysis in Familial Achromic Jaundice J V.

Dacie —p 331

Sex Hormones and B-lymphophilic Granulation of Liver Cells in Rat. V.

Korenchevsky —p 341

Thymus of Rat and Sex Hormones M. A. Ross and V Korenchevsky.

—p 349

Hemoglobinization of Erythroblasts. M C G Isaacs —p 361

Venomi Lecithin Reagent for Accelerated Clotting Test (Prothrombin

Time). Jelcety C G Hobson and L J Witts —p 367.

Lancet, London

1:745-776 (June 14) 1941

Brain and Mind: Philosophic Approach to Psychiatry. W. R. Brain.—p. 745.

*Undescended Testicle. R. E. Smith.—p. 747.

*Reduction of Dust-Borne Bacteria in Ward by Treating Floor and Bedclothes. M. van den Ende and E. T. C. Spooner.—p. 751.

*Outbreak of Poliomyelitis: Use of Sulfapyridine and Convalescent Serum in Treatment. S. Miller and S. Wray.—p. 753.

Fixation of Fractured Vertebrae. H. H. Greenwood.—p. 755.

Undescended Testicle.—Among approximately 1,000 boys from 9 to 18 years of age Smith found that 11 of 511 between 12 and 15 years of age had undescended testicles. Descent occurred in 8, spontaneously in 7 and by operation in 1. Five other boys had an associated hernia, making it probable that the testicles will not descend spontaneously. Nineteen other boys were known to have had undescended testicles at some time before the examination. At a second examination in 1940 undescended testicles were less common as age progressed. Of 705 boys more than 14 years of age 4, or 0.6 per cent, had undescended testicles, and of 267 aged 13 years or less there were 9, or 3.3 per cent, with undescended testicles. Study of 27 boys in whom one or both testicles have descended spontaneously and of 23 boys in whom descent has not taken place indicates that only undescended testicles associated with hernia should be treated surgically and that the others should be given the chance to descend spontaneously at puberty. If they fail to do so, operation should be performed without delay. The testicle which does not descend at puberty is generally prevented from doing so because of anatomic obstruction. The testicle is usually arrested at the external inguinal ring, at the internal inguinal ring or at the neck of the scrotum. The surgeon's task is made easier by endocrine therapy, under which the testicle hypertrophies and circulation increases. Fragile spermatic blood vessels are able to withstand the strain of being stretched when the testicle is inserted into the scrotum. Usually one postoperative course of endocrine therapy will cause the testicle to enlarge further and to maintain its new position. Puberty is the ideal age for operation.

Dust-Borne Bacteria from Bedclothes.—From a comparison of plates exposed before and after the bedclothes and the floor of a female ward were treated with liquid petrolatum, van den Ende and Spooner find that after treatment the dust-borne bacteria were reduced. For control after treatment a second female ward was used. The experiment included the oiling of the ward floor with spindle oil and the treating of blankets, sheets, counterpanes and pillow cases with 30 per cent liquid petrolatum in "white spirit" in the hospital laundry. Sample plates made during the succeeding days in the ward with the treated floor and bedclothes showed a general reduction in aerial organisms, and especially almost complete elimination of the peaks which correspond to bedmaking and sweeping. Dust plates made before the treatment of bedding showed that the oiling of floors alone did not significantly reduce dust-borne bacteria. The application of oil from solution in white spirit is at present not a practicable procedure in hospital laundries. The study suggests the advisability of further research and the devising of suitable methods of applying liquid petrolatum to bedding.

Sulfapyridine for Poliomyelitis.—Miller and Wray discuss the treatment in cases of poliomyelitis occurring during the summer of 1940. During the first three months of the epidemic, from June through August, there were 75 cases in the borough of Harrogate and 30 in the surrounding rural districts. At the outbreak of the epidemic, treatment was largely symptomatic and close attention was paid to splinting and other means of support. The earlier results were disquieting. Later in the epidemic sulfapyridine was tried, at first alone and later in combination with convalescent poliomyelitis serum; the response seemed to show a definite advance, as the attack was controlled rapidly. Toward the end of the epidemic the authors' plan of treatment with sulfapyridine and serum therapy was as follows: 1. Patients showing malaise or indefinite pyrexia without apparent cause were given sulfapyridine by mouth. 2. Those showing the earlier manifestations of the infection received in addition convalescent poliomyelitis serum. Initially 2 grains

(0.13 Gm.) of sulfapyridine was given by mouth and 20 cc. of convalescent serum intramuscularly, and thereafter 1 grain (0.06 Gm.) of the drug was given at intervals of four hours until the temperature settled, unless there were serious contraindications. Occasionally the dose of serum was repeated once or twice. 3. Patients presenting acute symptoms with impending or already developed paralysis were given initially 2 or 3 grains (0.13 or 0.2 Gm.) of sulfapyridine soluble intravenously in physiologic solution of sodium chloride at the earliest possible moment, together with 20 cc. of convalescent serum intramuscularly. The administration of sulfapyridine soluble was repeated at intervals of four hours until 8 to 10 grains (0.5 to 0.65 Gm.) of the drug had been given. A second dose of 20 cc. of the serum was given from eight to ten hours after the first. Next day sulfapyridine soluble and serum were repeated; sometimes in the more severe cases further injections were given on the third day. Modification for children was made according to age. Since this procedure has been adopted the authors have not had serious extension of paralysis in any case, nor have there been any deaths, and such reactions as have occurred have been negligible. They stress the necessity for early diagnosis, for they believe that only then can appropriate treatment avert much of the paralysis.

New Zealand Medical Journal, Wellington

40:151-212 (June) 1941

*Stearrhea in Infancy. Helen Deem and M. McGeorge.—p. 155.

Tuberculosis in Nurses: Mantoux Test. J. H. North.—p. 165.

Radium in Treatment of Cancer of Cervix. K. Mackenzie.—p. 173.

Convulsive Therapy in Psychoses. R. W. Medlicott.—p. 175.

Postgraduate Obstetric Education in New Zealand. A. Wilson.—p. 184.

Fibrosarcoma of Corpus Cavernosum Penis: Report of Case. H. Gaudin.—p. 188.

Electrical Factor in Renal Metabolism. W. N. Abbott and E. F. Fowler.—p. 190.

Stearrhea in Infancy.—Deem and McGeorge describe 7 cases of infant steatorrhea, probably due to congenital cystic fibrosis of the pancreas. Two of 4 resulting deaths were caused by respiratory infections; however, all infants showed a tendency to respiratory troubles. In 1 case, necropsy confirmed the diagnosis. Five cases could not be fully investigated but were included because of their clinical resemblance to the proved cases. In many of these cases no gross abnormalities of the pancreas were visible to the naked eye. Microscopically the normal glandular structure was seen to be replaced by large and small cysts, the walls of which were formed of flattened cells. The clinical picture seemed to be the composite result of failure to absorb various foods, especially fats and fat-soluble vitamins. A fat-free or fat-reduced diet, as well as the addition of pancreatin in 2 cases, caused prompt improvement. The laboratory diagnosis depended on the demonstration of the presence of steatorrhea and the absence of trypsin and lipase in the duodenal juice. For the investigation of pancreatic enzyme activity a duodenal tube was adjusted in the duodenum under the fluoroscopic screen and the duodenal contents were aspirated. Therapeutic suggestions are also added to this report.

Practitioner, London

146:289-352 (May) 1941

Etiology and Treatment of Impetigo. A. C. Roxburgh.—p. 289.

Ringworm—Diagnosis and Treatment. D. R. Lewis.—p. 296.

Skin Manifestations in Diseases of Malnutrition (Deficiency Diseases). H. S. Stannus.—p. 303.

Fracture Problem in War Time. St. J. D. Buxton.—p. 311.

Removal of Plasters. A. S. B. Bankart.—p. 317.

Some Wartime Psychological Problems of Children. W. L. Neustatter.—p. 320.

Prevalent Misconceptions of Pulmonary Tuberculosis. H. C. Thompson.—p. 326.

Modern Treatment of Parkinsonism. M. Critchley.—p. 332.

First Aid Apparatus for Fractured Femur. W. R. Wilson.—p. 335.

Modern Therapeutics: XXIII. Quinine and Allied Drugs in Treatment of Malaria. W. E. Cooke.—p. 338.

Tubercle, London

22:111-134 (May) 1941

Senile Tuberculosis. W. E. Snell.—p. 111.

Detection of Pulmonary Tuberculosis in Army Recruits. A. D. Little.—p. 121.

Dermatologica, Basel

83:1-200 (No. 1/3) 1941. Partial Index

Present Status of Oral Chemotherapy in Gonorrhea. G. Miescher.—p. 1.

Fluorescence-Microscopic Investigations of the Penetrability of the Skin by Fluorescent Substances. G. Miescher.—p. 50.

Photoactivity of Some Sulfanilamides. W. Burckhardt.—p. 63.

*Reactions Due to Typhoid-Paratyphoid-Tetanus Vaccination. M. Juon.—p. 80.

Innervation of Spinocellular Carcinoma: Case. Y. Pidoux.—p. 90.

Reactions to Typhoid-Paratyphoid-Tetanus Vaccination.—Juon reports 11 cases of cutaneous reactions following the combined typhoid-paratyphoid-tetanus vaccination: eczema 5 cases, psoriasis 2 cases and single cases of erythema nodosum, erythema exudativum multiforme, alopecia areata and tuberculous gumma. All the reactions with the exception of the last could be explained on the basis of a biotropic reactivation of conditions which had previously existed and were latent at the time of vaccination and which accordingly may have significance as indicating or contraindicating triple vaccination. In the case of the tuberculous gumma round or oval nodules on an inflamed base appeared about two weeks after the last injection, chiefly on the right arm and at the elbow. These were firm at first but eventually yielded a muddy yellowish liquid content. The Pirquet tuberculin test proved slightly positive; the microscopic examination confirmed the tuberculous character of the lesions. The case of postvaccinal alopecia areata suggested the interplay of some other pathogenic mechanism, a disturbance of the neurovegetative system. According to the author, grave accidents resulting from the use of the combined typhoid-paratyphoid-tetanus vaccination, now performed on a large scale in the armies of many countries, seem to be infrequent.

Oto-Rino-Laringologia Italiana, Bologna

10:177-280 (May) 1940. Partial Index

*Functions of Heart in Normal Man After Rotatory Stimulation of Normal Vestibular Apparatus: Electrocardiographic Study. T. Rodolfo-Masera.—p. 256.

Normal Heart After Rotatory Stimulation of Labyrinth.—Rodolfo-Masera performed electrocardiographic studies on 16 normal men to ascertain what changes take place on rotary stimulation of the posterior segment of the labyrinth. He used the Buys-Fischer method by means of which extralabyrinth interferences are excluded. The electrocardiograms were taken in the second lead by means of Boullitte's apparatus, which was arranged in such a manner as to enable the author to take electrocardiograms before, during and after rotation. The head of the patient was maintained immobile during rotation. The author found that the heart beat and the electrocardiographic waves did not change in the course of slow and rapid rotation, sudden arrest from rapid rotation, the various phases of post-rotatory nystagmus and complete rest three minutes after disappearance of the second phase of postrotatory nystagmus. The insignificant variations in the electrocardiograms during the test are physiologic and are caused by slight emotion. Variations of this type can be observed in normal persons even when they are at rest and are not affected emotionally. The author concludes that a direct relation between the sympathetic and the posterior segment of the labyrinth does not exist. The electrocardiographic changes observed during the stimulation of the posterior segment of the labyrinth are due to changes in the tonus of the nervous system caused by emotions not related to labyrinth stimulation.

Anales de la Catedra de Patología, Buenos Aires

2:307-524 (Dec.) 1940. Partial Index

*Transparietal Aspiration of Tuberculous Cavities of Lung. R. F. Vaccarezza and O. A. Vaccarezza.—p. 349.

*Bronchial Lavage in Early Diagnosis of Cancer of Lung. A. E. Bence.—p. 412.

*Eosinophilia in Pulmonary Tuberculosis. R. F. Vaccarezza, S. F. Erdstein and J. C. Rey.—p. 420.

Aspiration of Tuberculous Cavities.—The Vaccarezzas report 8 cases in which transparietal drainage of a tuberculous cavity was practiced. The postoperative period varied between six weeks and sixteen months. The treatment produced immediate subjective improvement which lasted for several months in

all of the cases. Cavernoscopy showed the presence of a heavy layer of caseous material which contained numerous tubercle bacilli. The treatment was discontinued in 1 case in which the catheter was not tolerated. In 2 cases the cavity diminished in size and the general condition improved. In another case a clinical recovery was obtained which has lasted up to now, more than six months after discontinuation of the drainage. The treatment failed in 4 cases. Failure was due in 2 cases to lack of parenchyma about the large cavity. In the other 2 cases the large cavity was circumscribed by atelectatic tissue and normal parenchyma. The cavity was not evident in the roentgenogram for six months. After a period of general improvement lasting six months, the large cavity reopened and new cavities appeared in the parenchyma about the old one. The authors suggest that intracavitary aspiration produces distention of the atelectatic tissue and of the parenchyma about the cavity. The local distention is sufficient to cause development of new cavities about the retracting one. The larger the cavity the more acute the local hyperdistention about the cavity and the greater the danger of development of new cavities. Increased distention of atelectatic tissue does not prevent increased distention of the parenchyma about the atelectatic zone. Microscopic studies demonstrated that a layer of epithelial tissue may be formed on the walls of cavities treated by aspiration and that aspiration does not stimulate local vasodilatation and increased blood supply. The blood supply of the walls of tuberculous cavities is naturally increased except when the cavities are in the phase of infiltration. Definite indications for this therapy have not been established. Absolute indications are: (1) adhesion of pleura to the lung to be traversed by the catheter, (2) isolated cavities partially or completely circumscribed by parenchyma or atelectatic tissue, the disease process being quiescent, (3) much increased intracavitary tension, (4) good general condition, absence of syphilis, the walls of the cavity appearing clean on cavernoscopy. Contraindications are free pleura, lesions about the cavity, active tuberculosis, diminished intracavitary pressure and poor surgical condition.

Bronchial Lavage in Cancer of Lung.—Bence directs attention to the value of bronchial lavage during bronchoscopy for diagnosis of incipient cancer of the lung. The procedure has the same value as biopsy. Incipient cancer of the lung is seen as an infiltration of the bronchial mucosa which bleeds during bronchoscopy. The blood and minute fragments of the mucosa about the bronchoscope contain cancerous cells, which may be identified in microscopic preparations. These fragments may be aspirated with the bronchoscope with the aid of lavage. The latter is done through Higuett's bronchoscope, which has two branches. Twenty cc. of physiologic solution of sodium chloride is injected through one of the branches and is aspirated through the other. The 5 patients observed by the author presented neither clinical symptoms nor roentgen signs of cancer but complained of moderate hemoptysis. The diagnosis of cancer from lavage made in all 5 was verified in 1 case by biopsy and in 2 cases by the evolution of the disease, while the remaining two are too recent to be verified.

Eosinophilia in Pulmonary Tuberculosis.—Vaccarezza and his associates subjected a group of patients with pulmonary tuberculosis and a group of normal persons to the Brosamle-Michaillon test for eosinophilia by injecting 0.2 mg. of tuberculin. The test was positive in all of the patients and negative in all normal persons. A positive reaction manifested itself by an early eosinopenia and a later hyper-eosinophilia. The early phase appeared within fifteen to thirty minutes after the injection and increased within thirty to forty-five minutes. The late phase appeared three hours after the injection, increased after nine hours and lasted for twenty-four hours. An intravenous injection of 10 units of insulin caused lowering of the eosinophils and was followed by a favorable general reaction. Intravenous injection of 10 units of insulin combined with a subcutaneous injection of 0.2 mg. of tuberculin prevented the tuberculin effect on the eosinophils. Neither early eosinopenia nor later hyper-eosinophilia occurred. A group of patients with pulmonary tuberculosis and persistent spontaneous hyper-eosinophilia were given daily intravenous injections of 10 units of insulin for five consecutive days and three or five more injections at intervals of

three days. Hypereosinophilia was controlled for a long time. The greater the hypereosinophilia before the treatment, the better the result. A favorable general reaction followed. Spontaneous hypoeosinophilia in pulmonary tuberculosis indicates organic instability. The condition is of an allergic nature. The progress of pulmonary tuberculosis depends on a selective allergic reaction of the parasympathetic segment, which is controllable by stimulating a defensive reaction of the sympathetic by insulin treatment. Just as hypereosinophilia indicates predominance of the parasympathetic allergic reaction, normal eosinophilia after insulin treatment indicates predominance of the defensive anti-allergic reaction. The treatment causes a more or less prolonged favorable organic reaction in the course of which the patient reacts favorably to proper medical or surgical therapy.

Hospital, Rio de Janeiro

19:681-842 (May) 1941. Partial Index

*Vitamin K in Surgery. R. Tourinho.—p. 755.

Vitamin K in Surgery.—Tourinho found hypothrombopenia in 2 patients exhibiting a hemorrhagic tendency. The patients were jaundiced from disease of the liver or the gall-bladder. Vitamin K, administered in doses of 4 mg. at intervals of three days up to a total of 32 mg., normalized the thrombogen content of the blood. The coagulation time of the blood was found to be retarded in 10 patients about to undergo an operation. They were given a daily injection of 4 mg. of vitamin K up to 16 to 24 mg. The coagulation time of the blood became normal. All of the operations were performed with minimal loss of blood. Vitamin K is indicated in the preoperative period of any operation in which bleeding is anticipated. To patients with normal thrombopenia vitamin K is administered two to five days before the operation. Large doses of vitamin K and transfusion are indicated in cases in which the amount of thrombogen is diminished and actual hemorrhage is present. In no case should an operation be performed unless a normal amount of thrombogen in the blood is attained by the administration of vitamin K. Vitamin K is indicated as an emergency treatment of surgical hemorrhage. The coagulation time of the blood improves within the first fifteen minutes after the injection and more so for the two hours after the injection. The early results of a single dose are transient. Administration of vitamin K in the preoperative period corrected irregular menstruation in a girl who suffered from a gynecologic disorder, controlled hematuria in a patient with urologic disease, and controlled rectal bleeding in a patient with hemorrhagic rectitis. The author believes that vitamin K stimulates liver function for formation of thrombogen and regulation of thrombogen metabolism.

Beiträge zur Klinik der Tuberkulose, Berlin

95:1-94 (June 25) 1940. Partial Index

Question of Temporary Eosinophilic Pulmonary Infiltrations. H. Schulze.—p. 1.

*Importance of Discharging Bronchus for Suction Drainage of Cavities. A. Schubert.—p. 31.

Air Pressure Inside of Tuberculous Cavities. W. Kayser.—p. 43.

Thoracocautery in Simultaneously Bilateral Pneumothorax. D. Michetti and W. Küchler.—p. 50.

*Concurrence of Pulmonary Tuberculosis and Pregnancy. M. Müller.—p. 56.

Pneumolysis with Subsequent Extrapleural Pneumothorax or Oleothorax. F. Ansell and E. Markgraf.—p. 78.

Avoidability of Tuberculosis. W. Büttner and I. Gottberg-Schlaadt.—p. 85.

Discharging Bronchus in Suction Drainage.—According to Schubert, the condition and the behavior of the discharging bronchus or bronchi of a tuberculous cavity are of a vital importance in the cure of the cavity. The bronchus discharges the contents of a cavity and carries air into it. Clinical and roentgenologic observations and investigations of the gas pressure inside the cavity indicate that complete closure of the bronchus produces favorable conditions for the spontaneous shrinkage of the cavity. Recent pathologic anatomic investigations likewise supports this observation. In the majority of cavities, however, the discharging bronchi permit the passage of air, but the permeability is not sufficient to adjust the passage of air to the respiratory movements. This results in an

effect somewhat like that of a valve mechanism and produces conditions unfavorable for a spontaneous cure of the cavity. Suction drainage can change these unfavorable conditions so as to promote shrinkage. By continuous suction which results in negative pressure the walls of the cavity are gradually shifted; this causes displacement of the discharging bronchus and reduction of its permeability, which in turn increases the suction so that finally shrinkage of the cavity is obtained. The discharging bronchus can thus be entirely excluded by the shrinking cavity so that it terminates blindly. This can be demonstrated in roentgenograms of favorable cases. Thus it is not necessary that the discharging bronchus be obliterated by changes in its mucosa, although this would further favor suction drainage. This behavior of the discharging bronchus can be demonstrated by a series of tomographs and by continuous registration of pressure changes within the cavity. A manometer attached to the cavity catheter will further corroborate this observation. Such measurements also reveal the extent of harmful effects exerted on the cavity by breathing, coughing, hawking and the exertion of the abdominal muscles. The author directs attention to the valvelike behavior of the discharging bronchus when the cavity is under considerable excess pressure. Such cavities appear round in the roentgenogram. Introduction of a catheter causes collapse and disappearance of the rounded shape.

Pulmonary Tuberculosis and Pregnancy.—Opinion regarding the influence of pregnancy on tuberculosis has undergone change. It was believed at one time that pregnancy exerts a favorable effect, at another time that it exerts no influence, and again that it represents a severe complication. The last opinion is most prevalent. Müller reviews observations on 54 tuberculous women who had seventy-six pregnancies, of which fifty-eight were carried to term, twelve were interrupted, four terminated in miscarriage and two terminated in abortion. He considers open tuberculosis, preexisting open tuberculosis and the presence of extensive lesions in closed active tuberculosis indications for interruption of pregnancy if an exacerbation takes place in the first few months of gestation. Interruption is indicated also in the presence of bilateral pneumothorax, even if there is no exacerbation of the tuberculous process during the first few months. In unilateral pneumothorax interruption is advisable if the pneumothorax is not well adjusted and if the pulmonary process is quite extensive and shows little tendency to heal. In incurable severe tuberculosis, interruption is always indicated. The author never resorted to interruption in inactive tuberculosis. In the author's hospital only 4 patients for whom interruption was not done developed severe exacerbation, and 2 of these should not be included because the pregnancy had become known too late. He does not believe that the existence of tuberculosis is a sufficient reason for doing away with an undesirable pregnancy, nor does he agree with those who insist that tuberculosis is never an indication for the interruption of pregnancy. The last attitude is wrong not only with regard to the welfare of the woman herself but also from the standpoint of population policy, because for the sake of one child it may make an invalid of a woman who later might have borne several children.

Der Deutsche Militärarzt, Berlin

5:305-352 (Aug.) 1940. Partial Index

Protective Vaccination of Armed Forces. T. Wohlfeil and J. Maass.—p. 305.

*Active Immunization with Combination Vaccines. D. Bartos.—p. 321.

Hygiene of Water During War. W. Schmidt-Lange.—p. 324.

Technic of Determination of Blood Groups in Army. H. Knauer.—p. 333.

Role of Kidneys in Localization of Disease in Acute and Chronic Articular Rheumatism. P. Backert.—p. 341.

Immediate Treatment of Gonorrhea by Means of Albucid (Acetyl-sulfanilamide). K. Stiller.—p. 346.

Active Immunization with Combination Vaccines.—Bartos presents a study of combinations of vaccines and of single vaccines: (1) typhoid, paratyphoid A, paratyphoid B, Schottmüller, Breslau, Gärtner and cholera; (2) typhoid; (3) typhoid, paratyphoid A, paratyphoid B; (4) cholera; (5) Breslau, and paratyphoid A, paratyphoid B; (6) Gärtner. He killed bacterial cultures by adding 0.4 per cent solution of mercury bichloride to the bacterial suspensions in a ratio of 1:20. The simple typhoid vaccine, number 2,

proved much less toxic than did the combination vaccine number 1; mice tolerated several times the dose of the simple vaccine, which proved lethal when combined. Formation of agglutinins was studied on rabbits and the impression was gained that the combination vaccines cause an earlier and stronger formation of agglutinins than do simple vaccines, but the decrease in efficacy likewise seems more rapid. The different heterogenic antigens act on one another as nonspecific irritants do, and the inflammatory reaction which develops at the site of vaccination plays the most important role. The nonspecific irritation by mercury bichloride should not be disregarded, because it is known that vaccines prepared with mercury bichloride cause a more rapid and stronger agglutinin reaction than do vaccines in which the bacteria have been killed with heat. Studies on human subjects revealed that combination vaccines cause stronger reactions than do single vaccines. The type and measure of immunity produced by a combination vaccine is determined by its composition. In order to obtain the desired degree of immunity the customary bacterial quantity must be introduced, because the synergism between the antigens is not so great that the required number of organisms can be greatly reduced. A pronounced antagonism between the different antigens could not be ascertained. Combining of vaccines calls for certain restrictions, because the likelihood of toxic reactions is somewhat increased by the combination, and the contraindications must therefore be estimated carefully. In deciding on how to combine the vaccines, it is important to bear in mind that immunity is not of uniform duration in different infectious diseases and that repeated vaccinations are required to insure adequate immunity. Additional laboratory research and epidemiologic observations are necessary before combined vaccinations can find extensive practical application.

Deutsche medizinische Wochenschrift, Leipzig

67:141-168 (Feb. 7) 1941

- *Exophthalmic Goiter and Its Treatment. P. Sunder-Plassmann.—p. 141.
The Thymus Problem: Criticism. H. Hoepke.—p. 146.
The Thymus Problem: Reply. Bomslov.—p. 148.

Exophthalmic Goiter and Its Treatment.—The neurogenic conception of the etiology of the disease, according to Sunder-Plassmann, is generally accepted. The connection between the parenchyma of the thyroid and the nervous system has been clarified by the discovery in the thyroid of a neurohormonal cellular system which is functionally related, by way of the parasympathetic system, with the vascular wall cells and the thyrocytes of the follicles. These neurohormonal cells are distributed throughout the parasympathetic system and the endocrine glands. The neurohormonal cells form an independent parenchyma within the thyroid and determine physiologically or pathologically the output of the thyroid. The significant factor in exophthalmic goiter is the unrestrained absorption of colloid material, both the stored and that which continues to be secreted. The posterior lobe of the hypophysis and the thymus are also involved under certain conditions. In operative cases in which iodine had been employed as a conditioning medium the death rate was as low as 1 per cent, compared with a 12 to 13 per cent mortality in iodine-fast cases. Roentgen therapy applied in less severe cases of exophthalmic goiter offers no guaranty of cure. A large number of roentgen-treated patients must subsequently be operated on and create the problem of how much of the roentgenologically damaged goiter tissue should be removed. The author recommends vitamin A and a combined dextrose and insulin medication for the purpose of controlling the toxins arising from the disintegration of albumin under roentgen therapy. Iodine is particularly effective in "thyrotoxic coma" occurring spontaneously during conservative treatment and in what was formerly called "postoperative reactions." These two comatose states, while not identical, have in common severe hepatic damage and an extreme upset of the sympathetic nervous system and may be due to endocrine insufficiency, caused in the one case by the unrestrained absorption by neurohormonal cells and in the other by thyroidectomy. Iodine therapy may be supported by intravenous infusion of dextrose or hypertonic solution of sodium chloride. No diagnostic means exists for detecting

the impending coma. An increase in the creatinuria levels (up to 15 per cent) manifested by unrest, vomiting and diarrhea may provide an indication which, however, cannot be always relied on. Prostigmine bromide serves as a temporary adjuvant in adynamia. Moderately painful arthritis reacts favorably to iodine and disappears after thyroidectomy.

Medizinische Klinik, Berlin

37:153-180 (Feb. 14) 1941. Partial Index

- Skin Diseases and Their Treatment in Military Service. Aretz.—p. 153.
Injuries of Region of Oral Cavity by Strong Electric Current. Lindemann and H. Lempke.—p. 155.
*Spontaneous Pneumothorax: Etiology, Pathogenesis and Therapy. A. Sattler.—p. 160.
Pain in Sciatic Nerve as Symptom of Obliterating Endarteritis. D. Pančenko.—p. 163.
Combined Calcium and Vitamin C Treatment. R. Krejtscha.—p. 165.
Chemotherapy of Bacterial Infections. R. Hilgermann.—p. 167.

Spontaneous Pneumothorax.—Idiopathic pneumothorax is seen as a rule in apparently healthy youths. It may lapse and persist for years. Thoracoscopy reveals a subpleural formation of vesicles which vary in size from a cherry to a man's fist. They may appear in groups or disseminated over both lungs; they are usually thin walled and rupture. The development of the vesicles according to Fischer-Wasels is caused by a stenosis of small bronchi by cicatricial processes with the formation of a valve mechanism. Air enters but cannot completely escape on account of the valve action. The result is progressive distention and destruction of vesicles. Congenital malformation may be responsible in infants and children; in adults the pathogenic factors are acquired. Removal of strands and adhesions promptly closes the fistula and terminates the pneumothorax. Artificial production of an exudative pleurisy is an effective therapeutic measure in persisting spontaneous pneumothorax. If the exudate reaches the level of the fistulous opening, the latter may become occluded by fibrin deposits. Resulting pleural obliteration prevents relapse. In place of this rather heroic method Sattler proposes his "aimed" pleural irritation. He introduces, under optic control, an irritating solution on the diseased area in the pleura. If necessary this "aimed" irritation can be combined with removal of adhesions. Subsequent thoracoscopy discloses induration or complete obliteration of vesicles.

Wiener klinische Wochenschrift, Vienna

54:63-86 (Jan. 24) 1941. Partial Index

- Modern Irradiation of Cutaneous Cancer. J. Wendtberger.—p. 63.
*Treatment of Apoplexy. R. Singer.—p. 65.
Present Status of Thoracocautery. H. Weber.—p. 68.
Serologic Changes and Treatment of Allergic Disorders. W. Frölich.—p. 73.

Treatment of Apoplexy.—Singer points out that in the presence of arteriosclerosis of the cerebral vessels necropsy frequently discloses cerebral edema. It seemed reasonable to expect that removal of this edema would be followed by improvement. Since myocardial damage is likewise frequent in these cases, it seemed advisable to improve the action of the dehydrating agent by simultaneous administration of digitalis. The author gives the apoplectic patient an intravenous injection of 1 cc. of salyrgan. The injection is repeated up to five times at intervals of from five to seven days and the dose is increased to 2 cc. Patients who seemed to be in a hopeless condition, such as those with a ventricular hemorrhage or a similar severe complication, patients whose conditions became noticeably worse in the course of three days of observation and those in whom the apoplexy had existed for more than three weeks were not subjected to this therapy. It was employed for 28 patients whose ages varied between 34 and 78 years. In 17 the therapy produced a considerable improvement. The improvement always followed from one to three days after the dehydration. In 5 other cases the effect was no better than that obtained with the older regimen. Two patients showed no improvement, and 4 others died. Complicating diseases, in 1 case pneumonia, in several cases hypostatic bronchitis and in many myocardiac defects, were likewise favorably influenced by the dehydrating treatment.

Wiener medizinische Wochenschrift, Vienna

91:21-38 (Jan 11) 1941

Sport for Healthy and Physically Handicapped Child W Aberle—p 21

*Conservative Treatment of Habitual Luxation of Shoulder B Heger—p 22

Sport as Cause and Cure of Disease H Mussnug—p 24

Bilateral Hematogenic Renal Diseases of Traumatic Origin and Their Estimation O Lurmann—p 29

Conservative Treatment of Habitual Luxation of Shoulder.—According to Heger, dislocation of the shoulder is a frequent sport injury. The relatively small glenoid cavity, a wide loose capsule and trauma at the elbow or directly to the shoulder are among the factors responsible for the frequency of luxation of the shoulder joint. The complicated ligamentomuscular apparatus is stretched or even torn during dislocations, and the capsular tear offers an insurmountable obstacle to reposition. The dislocation together with belated reposition is often responsible for habitual luxation of the shoulder joint, which the author defines as repeated dislocation in case of direct or indirect exertion of slight force or in case of extensive movement. The author considers only the traumatic forms, disregarding the pathologic luxations (injuries of the spinal cord, tabes syringomyelia and so on). The great number of therapeutic methods that have been suggested, such as plastic operations on bones, fascia and muscles, shortening of the capsule by puckering or excision, formation of capsular folds by means of the deltoid and more radical methods resulting in arthrodesis, indicate that the therapy of habitual luxation is difficult. Treatments by means of tapes and pressure pads are unsuccessful, because they limit the motility of the arm and produce atrophies. Prolonged immobilization is to be rejected particularly that which forces fixation in a direction apparently opposite to that of the luxation, because it leads to ankylosis. Early movement has proved helpful. The method used by the author makes use of this factor. It attempts to produce shrinkage of the capsule by injecting around it the patient's own blood and attempts to strengthen the musculoligamentous apparatus by systematic exercises. The author thinks that failures following similar treatments were caused not so much by the methods as such but rather by their application, the choice of substances and the selection of cases. To select the cases roentgenoscopy is advisable, because all cases in which there are defects in the bony part of the joint are unsuitable for this treatment, as are also cases in which severe tears of muscles and ligaments have occurred. The injections are given once every week and consist of 6 cc of the patient's own blood and 4 cc of the cytozym of hogs' lungs. They are introduced at several points through the deltoid muscle to the articular capsule. The author thinks that the cytozym makes the joint firmer by causing local irritation. Every injection is followed by twenty-four hours of immobilization. Beginning after the second injection, resistance exercises in the form of abduction and adduction and of pressing the arm forward and backward are begun and are gradually increased. At the end of seven injections the entire capsule has usually been surrounded by injections. The author does not think that this method will do away entirely with the surgical treatments of habitual luxation of the shoulder joint but that in suitable cases, particularly in athletes, the described treatment should be tried first.

Archiv fur Japanische Chirurgie, Kyoto

18:267-510 (March) 1941 Partial Index

*Studies on Anorectal Immunization T Torikata—p 267

Anorectal Immunization.—Torikata believes that the temporary increase in the antibody titers appearing within seven days in the blood of animals injected with the toxin of a microorganism is not a true criterion of active immunization. He is of the opinion that the true antibody formation requires approximately sixty days (rabbits) and that the additional increase in the antibody titers which occurs only after reinfection (subcutaneous or intravenous injection) is the only true criterion for quantitative indication of the effect of antigen or of immunization methods. As compared with the immunologic effect of orally administered typhoid coctigen the effect produced by the instillation of the same preparation into the lower portion (about

10 cm from the anus) of the colon was found to be quantitatively the greater. The coctigen is far superior to vaccine in the antibody formation, since in the former the inhibitory factor (impedin) has been completely destroyed. The active principle of antigen is identified as the impedin-free toxin of an organism, namely the water-soluble particles of the bacterial lipid and protein bodies. Vaccines containing intact microorganisms are usually ineffective as immunizing agents. The minimal time for the establishment of active immunity following anorectal administration of typhoid coctigen was found to be about four weeks. As ascertained by titration of the blood plasma, the antibody formation is more or less specific for the particular organism used, but there is also a certain degree of group specificity in immune reaction. Of these, the antibody formation specific for tubercle bacilli appears to be definitely specific for other organisms as well, though to a less pronounced degree. The increase in the opsonin content of the blood can also be demonstrated forty-eight hours after anorectal administration of typhoid coctigen preceded by the increased phagocytic activities of the local macrophages of the intestine and other organs. The process of antibody production appears to be due first to the ingestion and digestion of antigen by the reticulo-endothelial elements and later by the appearance of the active generalized antibody formation in the body. The highly specialized cells, such as the epithelium, in no way participate in active immunization. This explains the greater amount of phagocytic activity on the part of the local macrophages and hence a greater and more effective degree of immunization by the anorectal instillation of the antigen, since the duration of the actual contact of the antigen with the local histiocytes is much longer than by other methods of administration.

Bulletin of the Naval Medical Association, Tokyo

30:197-262 (April) 1941 Partial Index

*Subcutaneous Cellulitis Caused by *Coccobacillus foetidus* Orizans (Perez) S Okuyama—p 222

Pathology of Pernicious Anemia (Biermer) J Fukuda—p 245

Cellulitis Due to Pérez's *Coccobacillus*.—Okuyama reports the case of a 63 year old woman, who sustained a severe trauma at a public bath house. The infected area began to swell, with increasing pain, until on the fifth day of illness an incision was made. On the eighth day the spreading cellulitis was opened again, a dark colored, foul smelling fluid exuded from the purplish necrotic tissue. There was a considerable amount of gas formation at the site of infection. Culture of the exudate led to the isolation of *Coccobacillus foetidus* ozaenae (Perez), identifiable by the production of a foul smelling gas and the characteristic motile, gram negative and short rod-like morphology.

Kekkaku, Tokyo

19:59-150 (Feb) 1941 Partial Index

*Squalin (*C₂₈H₅₆*) and Tuberculosis T Takasaki and M Kogami—p 77

Squalin in Tuberculosis.—Squalin is an isomer of squalene, the nonsaponifiable fraction of oily fat, and a highly unsaturated hydrocarbon, having an elementary composition of $C_{28}H_{56}$. It is found chiefly in the oil extracted from shark liver. Of the two isomers, one is biologically active (squalin) and the other inactive (squalene). Intraperitoneal injection of squalin in doses of 0.5 cc in healthy rabbits causes a transient leukocytosis. Squalin can be demonstrated in tissues by microchemical fat staining techniques, such as iodide and bromide reactions, as well as by an oxidase positive reaction after subcutaneous, intravenous and intratracheal administrations. The most significant effect of squalin administration in experimentally infected tuberculous animals (rabbit, guinea pig) observed by Takasaki and Kogami is the appearance of acid-fast granular bodies in the cytoplasm of mononuclear cells in various organs, paralleling the inhibitory effect of the tuberculous process. The acid fast granules in the cytoplasm of these cells are frequently present in association with acid fast tubercle bacilli ingested by these cells. The appearance of these granules may then be regarded as a manifestation of accelerated functional activity of the cellular elements as a defense reaction against tuberculous infection.

Okayama Igakkai Zasshi, Okayama

53:401-678 (March) 1941 Partial Index

*Action of Guanidine and Its Cyclic Derivatives on the Gastric Motility of Rabbits (52d General Meeting, Okayama Medical Society, Feb 25, 1941) Y Okushima—p 650

Guanidine and Gastric Motility.—Okushima reports observations on the effect of guanidine and its cyclic compounds on gastric motility in rabbits. The preparations employed in this investigation were (1) guanidine hydrochloride, (2) benzylguanidine, (3) phenylethylguanidine sulfate and (4) pentamethyleneguanidine. Though somewhat variable in potency, constant concentrations of all these drugs exert a stimulating effect on the isolated rabbit stomach prepared according to the method of Magnus. The minimum effective dose for each of these drugs was found to be guanidine 0.05 per cent, phenylethylguanidine 0.005 per cent, pentamethyleneguanidine 0.001 per cent, benzylguanidine 0.0005 per cent. This stimulating effect is probably the result of direct stimulation of gastric musculature and in no way due to parasympathetic involvement, since the effect is not influenced by atropine. With a greatly increased dose (guanidine 1 to 5 per cent, benzylguanidine 0.5 to 1 per cent) the motility is at first accelerated and later becomes sluggish until it is completely abolished. Application of barium at this time has no effect, hence the loss of motility under these circumstances is due to muscle paralysis. When the drugs are administered intravenously, the gastric motility is definitely inhibited. The minimal effective doses were found to be 5 mg per kilogram of body weight for guanidine, phenylethylguanidine and pentamethyleneguanidine and 0.5 mg per kilogram of body weight for benzylguanidine. This inhibitory effect is present after bilateral vagotomy and appears in rabbits previously treated with phenobarbital, a slightly less pronounced inhibitory effect occurs after the bilateral section of visceral splanchnic nerves below the diaphragm either with or without vagotomy. After ligation of the abdominal aorta, application of the drugs still causes the inhibitory effect. On the contrary, bilateral adrenalectomy completely abolishes the inhibitory effect of these drugs on the rabbit stomach. These observations lead the author to conclude that the action of guanidine and its derivatives on gastric musculature is peripheral in nature and probably related to the accelerated secretion of epinephrine.

Sei-I-Kai Medical Journal, Tokyo

59:1026-1231 (Oct) 1940 Partial Index

*Concerning the Index of Enchondral Ossification M Oya—p 1195

Enchondral Ossification Index.—The author stresses the usefulness, in estimating disturbances in ossification on the long bones, of a quotient obtained by dividing the width of the proliferative cartilage zone by that of the preparatory calcification zone. This quotient has been named the index of enchondral ossification by Oya and can be applied both in experimental animals and in man. In newborn infants the value of the enchondral ossification index is in the neighborhood of 0.6 and gradually increases, so that after fifteen months of age the index is always over 1.0. Some variations are found from case to case, even in normal subjects, particularly during infancy and childhood, but in adults over 20 years of age the normal index is usually 1.5 or slightly above. In rickets the index is decidedly depressed.

Taiwan Igakkai Zasshi, Taihoku, Formosa

40:189-426 (Feb) 1941 Partial Index

*Therapeutic Experiments of Paragonimiasis (Lung Flukes) with Azosulfamide and Emetine Hydrochloride M Ro and S Yokogawa—p 268

*A Critical Study of Sodium Santoninate in Liver Function Test K Ishii and T Oh—p 334

Azosulfamide and Emetine Hydrochloride for Lung Flukes.—Ro and Yokogawa investigated the combined effect of azosulfamide and emetine hydrochloride on experimental paragonimiasis (lung flukes) in dogs, basing their objective proof on the nature of the parasites in variously treated animals. Previously (1939) the authors had reported a definitely beneficial effect of this combination treatment in 9 cases of para-

gonimiasis in man, and confirmatory reports have since been published by others. The effect of this combination treatment manifests itself within seven to nine days, first by the death of adult parasites and then by a rapid destruction and absorption of the flukes. Microscopically the therapeutic effect was characterized by congestion and hemorrhages of the capillaries in the wall of the cyst as well as conspicuous infiltration of large mononuclear and polymorphonuclear leukocytes, the changes not occurring in nontreated patients or in those treated only with emetine hydrochloride. Furthermore, there was considerable evidence of disturbance in the process of egg formation. While gonads (ovaries, testes, Mehlis' glands) degenerated early, almost no effect was seen on the yolk glands, which if anything showed evidence of increased function, so that the uterus and the vitelline sack were remarkably distended with yolk cells. The accumulated yolk cells frequently broke out into the excretory bladder, destroying portions of that body with progressive degenerative changes, thus causing the destruction of the anlage of the parasite. In cases in which this combination was employed, the areas immediately adjacent to the dead fluke were acutely inflamed, with cellular infiltration deeply invading the body of the parasite, while in control cases no such evidence was discernible. The efficacy of the treatment may be due to the combined parasitocidal action of emetine hydrochloride and of some toxic products of azosulfamide. While the specific parasitocidal action of the latter drug is still unknown, it appears to be related to the cellular infiltration, especially of the polymorphonuclear leukocytes in the foci.

Sodium Santoninate in Liver Function Test.—Ishii and Oh introduce a slight modification in the liver function test, utilizing for its criterion the excretion of injected sodium santoninate in the urine. On the morning of the test, following a twelve hour period of starvation, the patient was instructed to empty the bladder completely and then drink 200 cc of water. Thirty minutes after the water was given, 1 cc of 10 per cent solution of sodium santoninate was injected intravenously and the urine collected every ten minutes thereafter. As determined by the development of a red coloration on addition of sodium hydroxide, the initial excretion of the drug was tested. The samples of urine were collected for five hours at hourly intervals and the amount of the drug estimated in the Autenrieth colorimeter, a solution of 0.015 per cent azorubin S and 0.015 per cent orange G in equal portions being used for the standard. In testing 28 normal subjects and 15 patients with various types of liver disease, chiefly cancer and cirrhosis, the authors conclude that persons with normal liver function show initial excretion of the injected drug invariably about ten minutes after the administration, whereas patients with liver disease always have a delayed time of initial excretion. Patients with disturbed liver function likewise have delayed time of maximum excretion. While in normal subjects the rate of excretion is relatively constant, in patients with disturbances of the liver there is a considerable degree of fluctuation from case to case. It is therefore preferable to determine the initial excretion time of the drug for the evaluation of hepatic function rather than to estimate the total excretion at stated intervals.

Sovetskaya Meditsina, Moscow

Pp 1-56 (No. 1) 1941. Partial Index

Health Plan for 1941 S A Kolesnikov—p 3

*Local Anesthesia Therapy of War Wounds A V Vishnevskiy—p 10

Problem of Pain M M Gubergits—p 15

Some Data Concerning Treatment of Ulcers of Lower Extremities P O Eolyan—p 19

Effectiveness of Physical Therapy in Treatment of Injuries of the Peripheral Nervous System I K Kessel—p 21

Therapeutic Transplantation of Conserved Homologous Peritoneal Tissue M V Dunye—p 24

Barker's Modification of Girard's Herniotomy A T Michelson—p 27

Local Anesthesia Therapy of War Wounds.—Local anesthesia, according to Vishnevskiy, is intended not only to interrupt the link between the center and the periphery within the limits of a reflex arc but also to act on the general neurotrophic regulation through mild stimulation of the nervous system. The aim of his "creeping infiltration" is to introduce large amounts of a weak dilution of the anesthetic into tissue

spaces with the view of blocking large areas of nerve elements and their ganglions rather than to interrupt conduction trunks. The effect of various forms of blocking on the inflammatory processes are as follows: (a) A concealed inflammation becomes manifest, delimited and undergoes resolution; (b) an inflammatory process in the stage of serous inflammation may be arrested; (c) abscesses become more rapidly delimited, break down and undergo resolution; (d) the subacute and chronic infiltrating inflammatory processes may be strikingly influenced or cured. These observations led to the formulation of a working hypothesis that of the possibility of influencing an inflammatory process by means of various types of weak stimuli acting on the vegetative nervous system. Among the pathologic processes influenced by this method the author lists acute lymphadenitis, gonorrheal epididymitis, phlegmon, erysipelas, carbuncle, thrombophlebitis, acute mastitis, osteomyelitis, acute edema of snake bite, scorpion bite and of other poisonous vipers, traumatic brain edema, cerebrospinal meningitis, spontaneous gangrene, hemorrhagic colitis, and so on. A proof of the primary role of the vegetative nervous system in the mechanism of the action of the procaine block is to be seen in the effect obtained in pathologic states characterized by disturbance of tonus. This is true both for spastic and for paralytic states; thus intestinal obstruction of an adynamic or paralytic origin may be relieved by a lumbar block. The same observations were made with regard to the ureter and blood vessels, as for example in spontaneous gangrene and in Raynaud's disease, in which procaine block relieves the spasm. The same effect was observed in hemolytic and anaphylactic shock. The restitution of tone acts in either direction: the spasm is relieved or the depressed tonus is strengthened. Applying his neurotrophic theory of pathogenesis of inflammation to wounds and local suppurative processes, the author concludes that their proper therapy should combine a favorable trophic effect with a bactericidal one. He attempts to accomplish this aim by the local use of a balsamic ointment consisting of juniper tar 5 cc., bismuth tribromphenolate 3 Gm. and sufficient castor oil to make 100 cc. After preliminary cleansing with alcohol, the wound is packed with gauze saturated in this ointment. In extensively infected wounds of soft tissues or of bones, after the removal of the necrotic tissue the wound is carefully tamponed and a plaster of paris cast is applied for from seven to ten days. The author makes the following recommendations for treatment of war wounds: (1) application of local anesthesia in the initial treatment of wounds and open fractures; (2) the use of balsamic ointment dressing in the treatment of infected wounds during the various stages of evacuation; (3) procaine hydrochloride block and the balsamic ointment dressing for anaerobic gas infection; (4) a circular block of an injured extremity as prophylaxis of shock; (5) lumbar procaine hydrochloride blocking to combat shock from extensive trauma, burns, subcutaneous injuries, hemolytic and anaphylactic shock, and (6) procaine hydrochloride block and the balsamic ointment dressing in the treatment of chilblains.

Bibliotek for Laeger, Copenhagen

133:65-92 (March) 1941

*Absorption and Elimination of Sulfanilamide and Related Substances. E. Lundsteen, S. West and J. S. Paaby.—p. 65.

Absorption and Elimination of Sulfonamides.—Lundsteen and his associates found that sulfanilamide, sulfapyridine, sulfathiazole and methylsulfathiazole when administered orally are so rapidly taken up by the organism that a sufficiently high concentration of these substances is usually attained in this way. If nausea or other conditions prevent the administration of sulfapyridine by mouth, sulfapyridine can be given as the soluble sodium combination intravenously, intramuscularly or rectally, but not subcutaneously or intraspinally. Since sulfanilamide preparations pass slowly into the spinal fluid, the authors advise massive doses in meningitis, eventually sulfapyridine intravenously and sulfanilamide intraspinally. Acetylsulfapyridine is absorbed in only slight degree, they say, and sulfapyridine suspended in oil for intramuscular injection must be considered worthless.

Ugeskrift for Læger, Copenhagen

103:345-390 (March 20) 1941

Hyperinsulinism. I. Hypoglycemia and Hyperinsulinism. G. Magnussen.—p. 345.

Id. II. Four Cases of Hyperinsulinism. S. Agner, J. Boas and G. Magnussen.—p. 346.

*Id. III. Surgical Treatment of Pancreas Adenomas Producing Insulin (Insulinomas). P. Windfeld.—p. 353.

*Id. IV. Carbohydrate Metabolism in Hyperinsulinism and Its Medical-Dietetic Treatment. K. Lundbek.—p. 358.

Case of Hypoglycemia and Asthma: (Preliminary Report). V. A. Christiansen.—p. 364.

Hypoparathyroidism Treated with A. T. 10. M. Jersild.—p. 368.

Melanosis of Colon and Rectum. E. Madsen.—p. 371.

Surgical Treatment of Pancreatic Adenomas.—Windfeld describes the operation and the postoperative course in the 4 cases of hyperinsulinism reported by Agner and his associates. Whipple's technic was followed. The first patient was a man aged 40. An adenoma the size of a hazel nut was removed from the head of the pancreas. Microscopically it was a typical benign insulinoma with abundant cells; the insulin content was between 15 and 20 international units per gram. The day after operation the blood sugar rose to 400 mg. per hundred cubic centimeters. Examination a year later showed the patient to be well and psychically normal. The second patient was a man aged 22. Two adenomas, microscopically typical benign insulinomas, were found in the tail of the pancreas. Cultivation of the tissue failed to establish any insulin activity. The patient was well on discharge, but in two months typical hypoglycemic attacks recurred. Since the attacks were mild and the patient was able to work, dietetic treatment was instituted for the time being. The third patient was a man aged 46. There was an adenoma the size of a cherry in the head of the pancreas. It was microscopically a benign insulinoma with abundant cells and insulin content of 10 international units per gram. The blood sugar rose to 300 mg. per hundred cubic centimeters on the day after operation. Seven months after discharge the patient was well. The last patient was a woman aged 60. An adenoma the size of a hazel nut was removed from the body of the pancreas. The blood sugar rose to 216 mg. per hundred cubic centimeters following the operation and rapidly fell to normal fasting values and remained there. On the thirty-fifth day after the operation death occurred unexpectedly. A large embolus was found in both pulmonary arteries. The author points out that, because of their size and localization, insulinomas can practically never be established roentgenologically. Adenomas in the head of the pancreas are particularly hard to locate, and mobilization of the duodenum may be necessary. Cases have been reported in which the hypoglycemia apparently depended on a hypertrophy and an increase in the number of the islands of Langerhans. The results of resection have usually been poor. If the hypoglycemic attacks cannot be prevented by regulation of the diet, operation is advised. Death may occur in connection with insulin shock in spontaneous hypoglycemia, and in long-continued hypoglycemia irreversible changes gradually take place in the ganglion cells of the brain with resulting persisting psychic disturbances. About one fourth of the insulinomas removed have been malignant with a tendency to metastasize. Treatment with diabetogenic substance from the anterior pituitary is not recommended.

Dietetic Treatment of Hyperinsulinism.—Lundbek states that in mild cases of hyperinsulinism treatment with abundant carbohydrates may be tried, with frequent small meals and eventual carbohydrate administration between meals. If the attacks continue, also in somewhat more severe cases, treatment with diet low in carbohydrates may be attempted. In such cases hospitalization is necessary, so that the blood sugar curve may be followed for some time. Without hospitalization one cannot determine whether on the diet deficient in carbohydrates a sufficiently lowered insulin sensitivity can be attained, with the consequent high and long-continued postprandial rise in blood sugar; there may also be a danger in taking carbohydrates away from a hypoglycemic patient not under constant medical control. The author believes a diet low in carbohydrates is less rational in cases in which there are pseudodiabetic dextrose tolerance curves on a diet with abundant carbohydrates. If the attacks persist on dietetic treatment of the one kind or the other and the patient is constantly invalided, operation is advised.

Book Notices

Field Surgery in Total War. By Douglas W. Jolly, M.B., Ch.B.N.Z. With a foreword by Surgeon Rear-Admiral G. Gordon-Taylor, O.B.E., M.A., F.R.C.S. Cloth. Price, \$3.50. Pp. 242, with 32 illustrations. New York: Paul B. Hoeber, Inc., 1941.

The author discusses his experiences in a forward surgical unit with the Republican army in the recent Spanish civil war. In recording his experiences he has divided his work into two sections, the first dealing with organizational and tactical matters, for the initiating of early definitive treatment and rapid evacuation, while the second section deals with the technical care of the wounded in the forward area. The tactical and organizational section stresses the importance of evacuating all wounded from the battalion aid stations to a classification post, where they are immediately separated into three classes: those requiring operative work within five hours from the time of injury, those not so seriously injured who must be treated within ten hours after injury, and those who can be transported directly to the evacuation hospital. Here the author has developed his "three point forward system," which consists of the classification post, the No. 1 hospital, which is so placed that it can give definite treatment within five hours after incurrence of the wound, and No. 2 hospital, which is so located that it can give treatment within ten hours after injury. Hence we have the No. 1 and the No. 2 hospitals located not with respect to distance from the front but with respect to time lag in evacuation. The second section deals with the technical management of the different classes of wounds. It gives a detailed description of the operative procedure. The book is concluded with an appendix recording the "three point forward system" in action during withdrawal and offensive combat on the Ebro River.

Roentgen Interpretation. By George W. Holmes, M.D., Roentgenologist to the Massachusetts General Hospital, Boston, and Howard E. Ruggles, M.D. Sixth edition. Cloth. Price, \$5. Pp. 364, with 246 illustrations. Philadelphia: Lea & Febiger, 1941.

Because of the death of Dr. Howard Ruggles in 1939 it was necessary for Dr. Holmes to prepare the sixth edition of this book without the assistance of his co-author. The first edition of this manual appeared in 1919, and the fact that it has gone through five subsequent editions is ample evidence of the enviable position it has attained in roentgen literature. While the authors' purpose is to present a brief survey of the field of roentgen ray diagnosis, they nevertheless describe in the text the essential and basic roentgen appearances of a large number of pathologic conditions. The general scope of this manual is made possible by the authors' confinement of their description of the roentgen appearance of so many conditions to remarks which are noncontroversial in nature and which are generally accepted by radiologists in this country. The language used is delightfully clear and concise. The bibliography at the end of each chapter contains adequate references to the literature for those who care to go more fully into the conditions described in the text. The illustrations are unusually good and clearly portray the points that the authors desire to demonstrate.

This book, which has stood the test of time, is based on the wide clinical and laboratory experience of the authors and occupies a prominent place as a standard textbook in American roentgen literature and will be found valuable by the student, general practitioner and specialist.

Precedent Book, Surgical Service Peter Bent Brigham Hospital. Paper. Price, \$1.25. Pp. 136. Boston, 1941.

New members of the surgical service in Peter Bent Brigham Hospital receive a little book called "Precedent Book," which includes an introduction by the surgeon in chief, Dr. Elliott Cutler. An outline of this type is an invaluable guide to the young man as to what he may or may not do under various circumstances. Following a general statement of the organization of the service comes a section on administrative regulations and special services with detailed notes as to technics and conditions governing the use of such procedures as drugs, enemas, use of the roentgen ray and similar subjects. Especially valu-

able is the section on records and histories, which indicates the details involved in careful surgical examination. Next is a report on the laboratories, indicating which of these procedures are to be employed, then instructions regarding the operating room and parenteral fluid therapy, and there is a list of suggestions for the members of the house staff in the management of various routine conditions. The details provided include exactly the type of material that saves times and distress for those who are informed. The concluding section, which deals with nursing and social service, will indicate to the resident physicians the responsibilities of these departments.

The University and Public Health Statesmanship. By Arthur P. Hitchens, Harry S. Mustard, Walter S. Leathers and Charles-Edward A. Winslow. University of Pennsylvania Bicentennial Conference. Paper. Price, 50 cents. Pp. 33. Philadelphia: University of Pennsylvania Press, 1941.

Problems of Intestinal Obstruction. By John P. Peters et al. University of Pennsylvania Bicentennial Conference. Paper. Price, 50 cents. Pp. 56. Philadelphia: University of Pennsylvania Press, 1941.

Cause and Growth of Cancer. By Louis F. Fieser et al. University of Pennsylvania Bicentennial Conference. Paper. Price, 75 cents. Pp. 64. Philadelphia: University of Pennsylvania Press, 1941.

Dental Caries. By Henry Klein, Carroll E. Palmer, Basil G. Blaby and Elmer V. McCollum. University of Pennsylvania Bicentennial Conference. Paper. Price, 50 cents. Pp. 53, with illustrations. Philadelphia: University of Pennsylvania Press, 1941.

Hypertension. By Harry Goldblatt, Eugene M. Landis and Alfred W. Adson. University of Pennsylvania Bicentennial Conference. Paper. Price, 50 cents. Pp. 46. Philadelphia: University of Pennsylvania Press, 1941.

These are additional pamphlets in the University of Pennsylvania Bicentennial Conference Lecture Series, of which some were reviewed in *THE JOURNAL*, August 2, page 405. As indicated in the previous review, they afford an excellent summary of progress and outline of current knowledge. Physicians will be most interested in those numbers which deal with the science and art of medicine, but they should not overlook the importance of familiarizing themselves with such views pertaining to public health statesmanship as are expressed in the collection of addresses under that title. As these are in accord with the traditional altruism of the profession and consistent with maintenance of the quality of medical care, they should continue to receive medical support. When statesmen of the public health ignore the medical profession, as does the essayist who includes in his summary of progress the establishment of industrial hygiene units in public health organizations and ignores the work of the medical profession in this regard, the medical profession will wish to be heard on its own behalf with relation to statesmanship and the public health.

Manual of Clinical Chemistry. By Miriam Relner, M.Sc., Assistant Chemist to The Mount Sinai Hospital, New York. Introduction by Harry Sobotka, Ph.D., Chemist to The Mount Sinai Hospital, New York. Cloth. Price, \$3. Pp. 296, with 18 illustrations. New York: Interscience Publishers, Inc., 1941.

This book, which contains an outline of the methods employed in the laboratory of the Mount Sinai Hospital, had its origin in a few concise directions for interns who were called to perform emergency tests. Gradually the instructions were enlarged into a mimeographed volume for use in the hospital laboratory and in the postgraduate courses in clinical medicine given at the hospital under the auspices of Columbia University. Eventually Relner's Manual of Clinical Chemistry was evolved. According to the author, many of the procedures contained in the manual "are scattered throughout the literature and, unless a medical library is available, it is difficult to obtain the original article."

In his introduction, Dr. Sobotka states that the purpose of the book "is to give at least one method each for every contingency, and it has been attempted to select those methods which combine greatest accuracy with greatest simplicity" and hopes that it will be "of assistance to chemists and physicians in the correlation between routine analysis and clinical observation."

Because of the conciseness of the manual, no attempt has been made to include a complete bibliography for each method. However, the most recent reference is usually given for the benefit of those who may wish to refer to older articles on the

subject. Occasionally the particular modifications employed at the Mount Sinai Hospital are described.

The book is small and compact but contains twelve chapters dealing with subjects such as blood analysis, chemotherapy (sulfanilamide, arsenic), urine, cerebrospinal fluid, feces, toxicologic tests (arsenic, lead, mercury, barbiturates), gastric analysis, function tests (kidney, liver, miscellaneous as blood volume, dextrose tolerance test, prothrombin and creatine tolerance test), sex hormones, vitamins, and a miscellaneous chapter discussing the preparation of antigens, determination of calcium in pus, biliary and urinary calculi, sugar, the determination of the specific gravity, total solids, amount of protein, lactose and fat in milk, the preparation of dextrose solutions for intravenous use, and the determination of nitrogen by the micro-Kjeldahl method. The first chapter, entitled General Remarks, discusses measures and specifications, standard solutions, indicators and blood constituents and will undoubtedly be of service to laboratory workers.

Because of its conciseness the book should be used in conjunction with recognized textbooks on physiologic and pathologic chemistry. Nevertheless, it is another useful book on laboratory procedures, and many will probably consider it a worth while addition to the laboratory library.

Manual of Physical Diagnosis with Special Consideration of the Heart and Lungs. By Maurice Lewison, M.D., Professor of Physical Diagnosis, University of Illinois College of Medicine, Chicago, and Ellis B. Frellich, M.D., Associate Professor of Medicine, University of Illinois College of Medicine. In collaboration with George C. Coe, M.D., Instructor of Medicine, University of Illinois College of Medicine. Cloth. Price, \$3. Pp. 317, with 75 illustrations. Chicago: Year Book Publishers, Inc., 1941.

The main purpose of this small volume is to present clearly and simply the fundamentals of physical diagnosis. As the authors say in the preface, "Based on an extensive teaching experience with medical students and postgraduate students, we believe that there is a need for a revision of teaching methods and for a book on the subject of physical diagnosis that gives the essentials without sacrificing important details. For these reasons, an attempt has been made to prepare a practical manual which stresses the physiologic principles underlying the findings in the normal chest and their alterations responsible for the findings in the abnormal chest." It is a pleasure to note that the authors stress that "a carefully taken detailed history and careful physical examination, utilizing the senses of sight, hearing and touch, will suffice for correct diagnosis in the vast majority of cases." The book is divided into four sections. Section I considers the subject of the history and general examination, section II examination of the respiratory system, section III examination of the cardiovascular system and section IV examination of the abdomen, genitalia, extremities and reflexes. The first three sections are excellent and well illustrated. Section IV considers only briefly examination of the nervous system and only the superficial and deep reflexes. Chronic adhesive pericarditis is considered, but chronic constrictive pericarditis and acute cardiac compression are practically omitted. Although similar to other books on physical diagnosis, this new one is practical and serviceable.

Lipidoses: Diseases of the Cellular Lipid Metabolism. By Siegfried J. Thannhauser, M.D., Ph.D., Associate Professor of Medicine, Tufts College Medical School, Boston. Edited by Henry A. Christian, A.M., M.D., LL.D. (Reprinted from Oxford Loose-Leaf Medicine). Cloth. Price, \$6. Pp. 370, with 78 illustrations. New York, Toronto & London: Oxford University Press, 1940.

This monograph is undoubtedly the best on the subject in the English language. It was written originally as a section of Oxford Loose-Leaf Medicine, edited by Dr. Henry A. Christian. The treatment is systematic and comprehensive, and the didactic material is well illustrated by representative clinical cases and photographs. There are numerous references in the text, and a bibliography is appended to each chapter. The author has attempted to base his exposition on the known facts concerning the physiology and chemistry of lipid metabolism. Unfortunately these are relatively few as compared to other fields in metabolism. However, the little that is known is essential to the understanding and differentiation of the clinical material involved, and the author has made the most of it. Chapter I treats of the physiology and chemistry of lipid metabolism; chapter II of hyperlipemia; chapter III of xanthomatosis, includ-

ing primary essential xanthomatosis (metaplastic reticular and histiocytic cholesterosis), secondary xanthomatosis (eruptive form of xanthoma) due to hyperlipemia, and localized xanthoma formation in inflammatory tissue and in true tumors; chapter IV of Gaucher's disease (metaplastic reticular and histiocytic cerebrosidosis); chapter V of Niemann-Pick's disease (metaplastic reticular and histiocytic sphingomyelinosis). Although many of the minor lipidoses are common and readily recognized, others are rather rare and hence obscure to many physicians. This volume should therefore be a welcome addition to the office reference shelf. It can hardly be said that correct diagnosis in this field leads to many therapeutic possibilities. However, recognition and continued observation of this interesting clinical material are essential to further progress in the subject and meanwhile add zest to the practice of medicine, which is occupied so much of the time with the commonplace.

Foundations of Neuropsychiatry. By Stanley Cobb, A.B., M.D., Bullard Professor of Neuropathology, Harvard Medical School, Boston. Second revised and enlarged edition of the work formerly known as A Preface to Nervous Disease. Cloth. Price, \$2.50. Pp. 231, with 12 illustrations. Baltimore: William Wood & Company, 1941.

This book is a second revised and enlarged edition of the work formerly known as A Preface to Nervous Disease. The author confines his discussions to facts which have been proved to be accurate so that the student may understand the simpler workings of the central nervous system. Anatomic, physiologic and pathologic processes are closely interrelated. Because of this the book can be understood by the student. There are twelve chapters, on the autonomic nervous system, the cerebrospinal nervous system, motor integration and locomotion, the cerebral cortex, consciousness and the "mind body" problem, cerebral circulation, cerebrospinal fluid, general neuropathology, peripheral neuritis, special neuropathology, epilepsy and psychopathology. There is a limited bibliography. This book is recommended to all students and neuropsychiatrists.

Technology and Society: The Influence of Machines in the United States. By S. McKee Rosen and Laura Rosen. With an introductory chapter by William F. Ogburn. Cloth. Price, \$4. Pp. 474, with illustrations. New York: Macmillan Company, 1941.

The machine age has been blamed for a great many of the troubles of modern society. In this volume the authors study the influence of the machines. One section is of particular interest to the medical profession, namely "Science in the Professions." The coming of the stethoscope, the electrocardiograph, the roentgen rays and innumerable other devices have greatly complicated medical service and proportionately increased medical costs. Another chapter in the book is called "A Case Study of the Doctor and the Hospital." It appears clear that the authors have been almost wholly dependent on the literature prepared by those who have been advocating a trend toward socialized medicine. Their references include little or nothing from the opposite point of view. Far too many of the volumes in the field of history and sociology now being offered to the American people are prepared by fellows working in the universities who apparently make little or no first hand investigation among the persons working in the industries or professions concerned. The results are apparent in the incompleteness of their presentations and in the inadequacy of the conclusions based on incomplete studies.

Foreign Bodies Left in the Abdomen: The Surgical Problems, Cases, Treatment, Prevention: The Legal Problems, Cases, Decisions, Responsibilities. By Harry Surgeon Crossen, M.D., School of Medicine, Washington University, St. Louis, and David Frederic Crossen, LL.B., School of Law, Washington University. Cloth. Price, \$10. Pp. 762, with 212 illustrations. St. Louis: C. V. Mosby Company, 1940.

This book was written by a surgeon and a lawyer, discussing the surgical and legal problems of foreign bodies left in the abdomen. It emphasizes to surgeons the danger of leaving a foreign body in the abdominal cavity, the best plan of treatment in such cases and the problem of prevention. From the legal point of view the consideration deals with the present law and rulings in the matter, including a presentation of the general practice and decisions and also of the special points raised by particular laws in the various states, and the responsibility of the various participants in the operating room. Numerous instructive case records are included, each of which is

analyzed. It is emphasized that no two cases are exactly alike in pathologic conditions or in the details of what must be done. The attention of the surgeon cannot be given to watching sponges and instruments, for he must concentrate it on the pathologic conditions encountered and the problem of their care. It is surprising how easily and quickly an object may be enfolded in the intestinal coils and carried out of sight. Methods of preventing their loss are discussed. The medicolegal aspects are well brought out, and the volume is worth while as an authority on this subject.

The March of Medicine. New York Academy of Medicine Lectures to the Lally [Number VI], 1940. Cloth. Price, \$2. Pp. 154. New York, Morningside Heights: Columbia University Press, 1941.

For five years the New York Academy of Medicine has been providing a series of lectures for the public through its Committee on Medical Information. The lectures have been partially endowed by liberal gifts from Dr. Orrin S. Wightman and more recently by Mr. Lucius N. Littauer. The series just made available include lectures on the inheritance of mental disease by Abraham Myerson, chemical warfare against disease by Perrin H. Long, the story of our knowledge of the blood by Paul Reznikoff, the story of viruses by Thomas M. Rivers, the ascent from bedlam by Richard H. Hutchings and the romance of bronchoscopy by Chevalier and Chevalier L. Jackson. These lectures are designed for an audience of better than high school education. To the man in the street the lectures for the most part would hardly be informative because of the difficulty in following the scientific discussion. The ones on bedlam and bronchoscopy are, however, phrased in a different tone and could be easily understood by any one. No doubt the editors of the volume would do well to ask for rewriting or revision of the more technical essays to bring them into comprehension by a greater number of people.

Human Hopes: Addresses & Papers on Education, Citizenship, & Social Problems. By Ray Lyman Wilbur, President, Stanford University. Cloth. Price, \$3. Pp. 367. Stanford University: Stanford University Press; London: Oxford University Press, 1940.

The president of Stanford University is a distinguished speaker. His collected addresses and lectures give an impression of the social processes of the last two decades. He has always had an aptitude for succinct expression. He has always shown leadership in American education. Epigrams and anecdotes seem to bloom on every page. A few examples follow:

A man has to live with himself for a good many years.

Men have built great nations and great cities but have been unable to control ambition, greed or those forces which seem to arise within a people undergoing expansion in wealth and numbers.

Men recognizing common issues look at them together but from different angles. They are not unlike the young married couple whose firstborn had come. The father had purchased a beautiful—to him—baby carriage and brought it home. The new baby was properly installed therein and the young couple stood, filled with interest and enthusiasm, bending over the little one. The mother said "Can you believe it, that this belongs to us? Isn't it too wonderful?" He answered "It sure is. I can't see how that fellow can sell a carriage like that for \$7.25." It all depends on what is being looked at—the baby or the baby carriage.

My hope is to encourage you to do the most that you can with yourselves, but to do it thoughtfully and with due respect for the rights of others. Remember the answer of the man to the excited neighbor who said "I have the right to shake my fist in any man's face." "Yes," was the reply, "but your right to shake your fist in my face ends exactly where my nose begins."

Edith Cavell. By Helen Judson. Cloth. Price, \$2.50. Pp. 288, with portrait. New York: Macmillan Company, 1941.

Here is the history of Edith Cavell based on a study of all the newspaper and periodical documents of the time and from a study carried out in England by the author, who went especially for that purpose. She went also to Brussels to learn at first hand the available facts, and she studied also the contributions of Brand Whitlock and Hugh Gibson. The story is well told with sympathy and with admiration. War brings strong alignments. No doubt from the German point of view Edith Cavell through her aid to British soldiers was a serious menace. Nevertheless, such examples of heroism and self sacrifice as hers live far beyond the time when the accomplishments of war heroes are forgotten. This volume by Helen Judson makes the story come alive again as fresh as if it were in today's papers.

Leitfaden der Neurologie. Von Dr. med. habil. F. Laubenthal, Dozent für Neurologie und Psychiatrie an der Universität Bonn. Mit einem Geleitwort von Prof. Dr. K. Pohlisch. Cloth. Price, 10.35 marks. Pp. 252, with 52 illustrations. Leipzig: Georg Thieme, 1941.

This guide of neurology is divided into three parts: neurologic methods, neurologic syndromes and diseases, and an appendix. The first part discusses history, inspection, examination of the various functions and the spinal fluid and finally roentgen ray diagnoses. The second part is made up of twenty-eight chapters taking up in order of their appearance the myopathies, the peripheral nerves, disorders of the plexuses, syndromes and diseases of the pyramidal pathways, disorders of the posterior columns, gray matter, cerebellar systems, frontal, temporal, parietal and occipital lobes, various aphasias, apraxias and agnosias, diseases of the extrapyramidal system, corpus callosum, meninges, pituitary, discussion of epilepsy, disorders of the autonomic nervous system, trauma to the nervous system and syndrome of lightning stroke and electrocution. This is just another book without anything new. It cannot be used as a textbook. As a reference book it does not even come up to the books and compends already published in the United States.

A Conscientious Turncoat: The Story of John M. Palmer 1817-1900. By George Thomas Palmer. With an Introduction by Lloyd Lewis. Cloth. Price, \$3. Pp. 297, with portrait. New Haven: Yale University Press; London: Oxford University Press, 1941.

The author of this volume, Dr. George Thomas Palmer, is a physician whose grandfather John M. Palmer is the person described in this book. He was a Democrat who helped to found the Republican party and became a Republican governor of Illinois. Later he switched back to the Democratic party and became a successful lawyer and a Democratic U. S. Senator, and finally he headed the Gold Democratic third party and ran for president on the Gold-Democratic ticket in 1896. It is said of him that, when he was governor of Illinois, vetoing became such a habit with him that when a reporter put the Lord's prayer on his desk, he vetoed that. Dr. Palmer has written an excellent contribution to history. He shows a sense of the dramatic and he reflects one of the most fascinating periods in American history.

The Diseases of Women. By Trotula of Salerno. A translation of "Passionibus Mullerum Curandorum." By Elizabeth Mason-Hohl, M.D. Cloth. Price, \$2. Pp. 52. Hollywood, California: The Author, 1940.

Medical historians know that for some years there has been an argument as to whether there ever was a woman physician known as Trotula who lived nine hundred years ago. The first edition of this book was printed in 1544. According to the author, Trotula was a woman physician who taught, treated diseases and wrote at the University of Salerno in the eleventh century and who, according to a church record, died in 1097, at which time a procession of mourners 2 miles long followed her to the grave. Indeed, she is said by the author to have had a husband and two children. There are German medical historians who insist that Trotula was actually a book written by a Roman freedman of the Empress Julia. Here, however, is a free English translation of the text published under the name of Trotula in 1544, a most valuable contribution to medical history.

Health: Mental, Moral and Physical. By Horace Wendell Soper, M.D., F.A.C.P. Cloth. Price, \$1.50. Pp. 109. Boston: Christopher Publishing House, 1941.

This book contains chapters on health, a chapter of praise for the city of St. Louis, a chapter on Robert T. Ingersoll, a biographic note about a physician whom the author admires, a chapter on alcohol written during national prohibition times, a denunciation of milk as a human food except for infants, and the author's views on other phases of health and hygienic living. It is sketchy and in some instances at variance with accepted scientific concepts.

Pro biologichne znachemnya sirki. [By] Prof. N. B. Medvedeva. [Biologic Significance of Sulfur.] Paper. Price, 6 krb. Pp. 103. Kiev: Vidavnistvo Akademii Nauk URSR, 1940.

The monograph is in the nature of a general review of the subject, supplemented by a complete bibliography on the subject. Unfortunately, it is written in one of the least accessible of all European languages—the Ukrainian.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

TOXICITY OF NITROPARAFFINS IN PAINT REMOVERS

To the Editor:—In connection with the use of paint remover by the Air Corps, the question arises as to the toxicity of certain nitroparaffins contained therein. The paint remover is composed of 25 per cent nitroethane, the remainder being ethyl alcohol, ethyl methyl ketone, ethyl formate and toluene. Recommendations and suggestions are requested with regard to the toxicity and irritating properties of this compound and the maximum percentages of the irritating agents permissible therein.

F. O. Carroll, Lieutenant Colonel, Air Corps, Dayton, Ohio.

ANSWER.—All the constituents of this paint remover, with the exception of ethyl alcohol, may be harmful under some circumstances. Ethyl formate, while rated as a minor skin irritant, has been used extensively in medicine, internally for gastroenteritis, externally as a local anesthetic and through inhalation as a respiratory sedative. Applied as a constituent of paint remover, it may decompose with the liberation of formic acid, which in concentrated strength is dangerously caustic to the skin and mucosa. It is not possible to fix any limit of safety, since injury depends more on the extent of decomposition, which is variable, than on the actual quantity present.

The toxicity of methyl ethyl ketone lately has been reported by Specht, Miller, Valaer and Sayers in "Acute Response of Guinea Pigs to the Inhalation of Ketone Vapors," Bulletin 176 of the National Institute of Health, 1940. In animal experiments, exposures were provided to 1, 2.5 and 5 per cent vapors. With the concentration at 2.5 per cent by volume, animals exhibited within ten minutes marked salivation, lacrimation and restlessness; within six hours of exposure most laboratory animals were dead after having exhibited loss of hearing, depressed heart and respiratory rates and generalized congestion due to vasomotor disturbances. Methyl ethyl ketone likewise is a mild cutaneous irritant. This substance may not be regarded as highly dangerous as industrially used, since one thousand parts per million are believed to be within safe limits.

Nitroparaffins, including nitroethane, are regarded as toxic by some investigators (Machle, Scott and Treon, *J. Indust. Hyg. & Toxicol.* 22:315, 1940). These authors conclude that:

Nitroparaffins are toxic and precautions are necessary for their safe handling.

Concentrations of 0.05 per cent vapor of nitromethane and of nitroethane in air were found to be safe and tolerable concentrations for guinea pigs, rabbits and monkeys.

A concentration of 0.1 per cent nitromethane vapor in air caused the death of one monkey and may be assumed to be a dangerous concentration for man.

Lethal concentrations for animals are far below narcotic concentrations, and beginning narcosis cannot safely be used as a warning of dangerous concentrations.

Derivatives of the nitroparaffins studied have no appreciable vapor pressure at ordinary temperatures. Danger from their use appears to be limited to accidental ingestion.

The concentration of toluene should not exceed two hundred parts per million in the atmosphere breathed by workers. While the order of toxicity is lower than that for its homologue benzene, this substance is a cause of acute and chronic forms of injury. In any large group exposed some cutaneous involvement is almost inevitable, and systemic poisoning from toluene is likely if large areas of evaporation are provided or work occurs in confined areas.

HYDROGEN ION CONCENTRATION OF THE SKIN

To the Editor:—Can you give me some information regarding the pH of the normal skin, as well as the vesiculated skin of eczema, herpes zoster, herpes simplex and impetigo? Where can I find reference articles on this subject? It occurred to me that if the pH could be determined of exudate arising from vesicular lesions it might be possible to adjust the pH of the medicament employed, as is done in ophthalmic lotions in adjusting to the pH of tears.

A. S. Tenney, M.D., East Orange, N. J.

ANSWER.—According to Pillsbury the pH of the surface of the skin shows wide variations in different areas and in different subjects. The average pH for each region is as follows: the flexor surface of the forearm, 5.1; the extensor surface of the forearm, 5.3; the flexor of the index finger, 5.4; the groin, 5.7; the axilla, 5.8, and the fourth interdigital space of the foot, 6.5.

According to Blank, who measured the pH of the normal cutaneous surface of adults ranging in age from 19 to 27 years

with the glass electrode, on exposed areas it was from 4 to 7, but most of the readings were between 4.2 and 5.6. The pH varies more from person to person in women than in men. The average pH of women is about 0.5 higher than that of men. The extensor surfaces of the arms are slightly more alkaline than the corresponding flexor surfaces. The antecubital region is the most acid area on the arm.

Blank furthermore stated that there were wide variations in the daily measurements of the pH of the cutaneous surfaces of 5 adult women with no apparent lesions whom he examined. Two of these showed variations daily which repeated themselves at intervals of the menstrual cycle. This, however, was not true of 3 of the women examined. No correlation between the pH of the cutaneous surface and the environmental temperature could be definitely established, although there was some indication that the pH dropped as the temperature increased.

According to Pillsbury the intact skin is able to withstand solutions of a pH ranging from 2 (three times that of normal hydrochloric acid) to 12.6. Abraded skin reacts violently to solutions having a pH of 12, a slightly purulent ulcer being produced, healing slowly and leaving a scar. The response of abraded skin to alkaline solutions of a pH up to and including 12.6 is no worse than that of intact skin. Acid solutions applied to normal skin show almost no tendency to a rise in pH . Alkaline solutions show a definite and regular fall in pH on contact with the skin.

Pillsbury used acid and alkaline buffer ointments on various types of lesions but could not find any appreciable effect of the pH per se of the material as compared with the unbuffered medicaments. Some authors have claimed increased benefits, on the other hand, from the use of applications buffered at definite pH values. The evidence for such claims, however, seems to be meager and has not gained general acceptance.

References:

- Pillsbury, D. M., and Shaffer, B.: Cutaneous Reaction, with Reference to Surface pH , Reaction to Ointments and Solution of Different pH and Effect of Skin in Modifying pH of Applied Solutions, *Arch. Dermat. & Syph.* 29:253 (Feb.) 1939.
Blank, I. H.: Measurement of pH of the Skin Surface: II, pH of Exposed Surfaces of Adults with No Apparent Skin Lesions, *J. Invest. Dermat.* 2:75 (April) 1939.

DETERMINATION OF BASAL METABOLISM IN MENTAL DISORDERS

To the Editor:—The determination of the basal metabolic rate is generally conceded to be one of the most important diagnostic procedures in determining the degree of thyroid activity. One of the basic parts of the test is the maximum elimination of physical exertion and, to a lesser degree, emotional disturbance. It is desirable to determine the basal metabolic rate of patients with certain mental diseases who are too highly excited to be cooperative for the usual conditions of the test. Of what value would a determination of the basal metabolism be if such a patient was first narcotized, as with a heavy dose of sodium amylol or paraldehyde? What influence would the administration of milder sedatives have on the basal metabolism? In a case of thyrotoxicosis of some severity would it render the reading valueless? J. M. Read, in *The Journal*, June 17, 1922, page 1887, gave a "prediction formula" which he claimed gives some idea of thyroid activity: basal metabolic rate ≈ 0.683 (pulse rate $\div 0.9$ pulse pressure) — 71.5. Is this formula of practical value?

M.D., Ohio.

ANSWER.—There are two important considerations: 1. Like other laboratory procedures, the determination of the basal metabolic rate is subject to error and therefore must always be correlated with the clinical picture. 2. It is important to determine the level of metabolism by having the test repeated frequently on different days. Little importance should be attached to a single reading. Repetition of the test on different days will eliminate the element of fear, so that sedatives rarely will be necessary except for the most unstable patients, of whom the determination of the basal metabolism is of doubtful value anyway. A mild sedative given the night before the test will not interfere with its accuracy, but a narcotizing dose may throw it off to a considerable extent. In patients with thyrotoxicosis sedatives are not often necessary, and, when they are, moderate doses the night before the test usually suffice. It is only on the rarest occasions that any difficulty is encountered. It is impossible to secure an accurate estimation of the basal metabolism of some patients because of rapid breathing or irregular breathing or both. This difficulty is encountered more often among patients who have psychoneuroses than in those with thyrotoxicosis. There is a rough correlation between the pulse rate and the pulse pressure on the one hand and the basal metabolism on the other, but this correlation is not close enough for accurate estimation of the basal metabolism from the pulse rate and the pulse pressure. The "prediction formula" of Read is therefore of interest but is not especially valuable for clinical use.

PROBABLE ARTERIAL EMBOLISM OF LEGS

To the Editor:—A woman aged 56 has chronic cholecystitis and auricular fibrillation, both of several years' duration. She takes 1½ grains (0.1 Gm.) of digitalis every night before going to bed, and a recent electrocardiogram showed moderate effect of the digitalis. In personality, she is nervous but active. Her blood pressure is 170 systolic and 110 diastolic. One night she was unable to sleep, and after several hours in bed she suddenly suffered a severe pain in the right toe and then in the left toe, and then both legs became painful up to the knees. Observation of the extremities by members of her family showed that both lower extremities were blanched, while she was in agony from the excruciating pain. I arrived about an hour after it started, after she had taken ½ grain (0.03 Gm.) of codeine with 3 grains (0.2 Gm.) of acetylsalicylic acid and after the extremities had been given a brisk massage. Color was returning at that time, and she felt intense numbness and a tingling sensation. Another ½ grain of codeine was given, and 2 cc. of caffeine with sodium benzoate was injected intramuscularly. In about half an hour she felt well again. The next morning she bathed her feet in water which to her was tepid but to her assistant was hot, but she had no pains. I felt the pulsation of the dorsalis pedis when I saw her that night. She had had a similar but more severe attack the previous year but none since then. Can you tell me whether this is a form of Raynaud's disease in spite of the fact that the upper extremity has never been involved? Can you suggest a better diagnosis and treatment? Although there has been a year's interval between attacks, I should like an explanation of the phenomenon.

M.D., Connecticut.

ANSWER.—Raynaud's disease is a definite syndrome characterized by intermittent episodes of discoloration, limited almost entirely to the fingers or toes. When it is fully developed, the syndrome is characterized by pallor and followed by cyanosis and then by rubor. Such episodes of discoloration are almost always induced by exposure to cold, but occasionally they occur as a result of emotional strain. In the early stages the digits assume normal color within a few minutes after the nervous strain has been relieved or the extremities have been exposed to warmth instead of to cold. Raynaud's disease is almost never associated with pain, although numbness and awkwardness of the extremities are frequently associated with the pallor and cyanosis, and tingling is frequently associated with the stage of redness. It seems certain that the patient whose history is outlined does not have Raynaud's disease. The history is suggestive of sudden arterial occlusion associated with severe secondary spasm of the main arteries of the lower extremities. It is probable that as a result of the auricular fibrillation there are thrombi on the walls of the auricles of the heart, parts of which become detached at times to form emboli to the lower extremities. Such an event would explain the blanching of the skin and the severe pain. The disappearance of pain, the return of normal color to the skin and the return of pulsations in the peripheral arteries in the case of arterial embolism is apparently due to relaxation of the arterial spasm which results from the lodging of the embolus in the peripheral arteries. The problem in this case is the prevention of embolism, and the advisability of restoration of normal cardiac rhythm by using quinidine sulfate should be considered.

There are three important "don'ts" in the treatment of sudden arterial occlusion: Don't delay treatment for more than two or three hours, don't elevate the extremity and don't subject it to heat which exceeds by more than a few degrees the temperature of the body. Delayed treatment means a poor prospect of recovery in those instances in which recovery would not occur spontaneously. Until the custom disappears entirely it cannot be emphasized too frequently that tissue deprived of its normal blood supply does not tolerate heat well. Hot water bottles are frequently of a temperature which exceeds 150 F. and will almost invariably provoke burns if allowed to come in contact with the skin. It is believed that recovery would have occurred in many cases if burns had not resulted from hot water bottles.

Continuous intravenous infusion of appropriate amounts of heparin may be begun at once. The time for coagulation of the blood should be kept as nearly as possible at three times normal. This serves to prevent extension of thrombosis and to prevent the thrombosis which may occur after operation if embolectomy is performed. Treatment with heparin should be continued until recovery or until gangrene is inevitable. If successful operation is performed, treatment with heparin should be continued for several days.

Opiates should be given immediately to control pain as in myocardial infarction. The ingestion of alcoholic drinks may be of benefit, apparently because alcohol is an antispasmodic as well as an anodyne. The extremity should be wrapped in cotton, which can be held in place with a roller bandage to preserve the natural warmth of the extremity. A cradle, open at one end and containing not more than one or two bulbs, may be placed over the extremity. The temperature of the air about the limb should not exceed 105 F. The extremity should be

placed in a dependent position. When the legs are involved, the head of the bed should be elevated; when the arms are involved, the patient should be in the semisitting position. Vasodilators should be given to relieve arterial spasm, if present. Papaverine hydrochloride, which is a vasodilator when given intravenously or into the artery proximal to the area of occlusion, in amounts of 0.032 Gm. will produce improvement in the circulation of the limb within a few minutes if it is effective at all. Care should be taken that the solution of papaverine hydrochloride is physiologically active. If the first injection does not cause improvement, it is questionable that further trial with this drug will benefit the circulation. If improvement follows use of papaverine, the injection can be repeated whenever there is evidence of failing circulation to the extremity. The temperature of the environmental air, that is, the room temperature, should be kept at about 90 F. Hot packs may be applied continuously to an extremity not involved or to the involved extremity proximal to the embolus, as both procedures should produce vasodilatation. Intermittent venous occlusion may help. An ordinary sphygmomanometer cuff placed well proximal to the site of occlusion may be alternately inflated to diastolic blood pressure and deflated at two minute intervals for several hours. The Sanders oscillating bed, which performs postural exercises for the patient, may help, particularly if treatment is carried out in a warm room. Short wave diathermy may produce vasodilatation. Electromagnetic induction by means of a cable arranged in a pancake formation over the lumbosacral area is a superior method.

The use of intermittent negative and positive pressure as described by Herrmann and Reid has been successful in their hands and should be used if a machine is available. On the assumption that one of the chief requisites for a favorable outcome is the induction of collateral arteries to assume a heightened function of transportation of blood, spinal anesthesia may be tried when the lower extremities are involved, as this procedure produces maximal vasodilatation. If the procedures outlined do not produce a rapid improvement in the circulation, surgical removal of the clot should be considered when occlusion is due to an embolus. As in the treatment of diabetic coma, constant attendance of a physician is required until the situation is relieved or an unfavorable outcome is definitely established. This duty cannot be judiciously delegated to nurses or relatives. If the diagnosis is made promptly and the treatment outlined is carried out with celerity and constant attention, the results will be much better than they are when less rational, or haphazard, regimens are carried out.

PREVENTION OF CALCIUM CYANAMIDE DERMATITIS

To the Editor:—What precautions can be taken to prevent cutaneous irritations appearing in men handling calcium cyanamide? This is a black powder manufactured by North American Cyanamid, Ltd., of Ontario, Canada. I understand that it is used as a fertilizer. The outstanding subjective complaint is one of itching.

Irving Lynn, M.D., Jersey City, N. J.

ANSWER.—Calcium cyanamide (CaCN_2) is used as a fertilizer and in the manufacture of various chemical compounds such as ammonia, sodium cyanide, urea, guanidine compounds and certain synthetic resins. Dermatitis is of frequent occurrence among workers coming in contact with it. Calcium cyanamide contains considerable lime (calcium oxide), which contributes to its irritating effect. Calcium cyanamide not only causes dermatitis but will cause severe edema of the mucous membranes of the eyes, nose and throat if the workers exposed to it indulge in alcoholic liquors.

Dermatitis and other toxic manifestations occurring among those exposed to calcium cyanamide can be prevented by totally enclosed methods of manufacture, by the wearing of protective clothing and daily changing to clean work clothing and by taking cleansing shower baths after exposure.

For persons spreading cyanamide as a fertilizer, the wearing of protective clothing and respirators and the shower baths after work are to be recommended. Protective clothing should be impermeable to dust and may consist of the new synthetic resins as described by Schwartz, Warren and Goldman (Clothing for Protection Against Occupational Skin Irritants, *Pub. Health Rep.* 55:1158 [June 28] 1940).

If respirators are not used, a little petrolatum put into the nostrils will help to protect the septum against ulceration, and several layers of gauze tied around the nose and mouth are often preferred by workers to respirators.

ATTACKS OF ABDOMINAL PAIN

To the Editor:—A woman aged 35 has come to me complaining of intermittent attacks of abdominal pain over a period of four years. The first attack was associated with pain sufficiently severe to cause her to double up on the floor; during her contortions the pain suddenly ceased, and she was feeling perfectly well by the time her physician arrived. In the last four weeks she had had two attacks. The pain is referred to just below the xiphoid process. The character is described as a "boring in" pain, pressing, even constricting without any radiation whatever but causing some difficulty in breathing. The abdomen becomes "swollen and hard," and while there is no desire to move the bowels the patient feels that, if she could, it would relieve the sensation of swelling and hardness felt in the abdomen. There is no associated sweating, nausea, vomiting or elevation of temperature. The later attacks differ in no essential from the earlier episodes except that now she experiences a feeling of fatigue and weakness for several days after each attack. Four weeks ago I saw her in an attack, and the only abnormalities were a moderately tender spot just below the xiphoid process and a little muscular spasm overlying the area. There was no other abnormality such as fever, perspiration, pallor or cyanosis. The pain was so severe that I gave her $\frac{3}{4}$ grain (0.01 Gm.) of morphine intravenously, which instantly relieved her. A week later she had another attack with greater pain and well marked muscular spasm over the tender epigastric spot. There was also tenderness over the sigmoid and pelvic parts of the colon. Again morphine relieved her, but slight tenderness was still present in the epigastrium. Two weeks later she felt another attack starting, and, in trying to get into a position of comfort, she turned on her left side and was instantly relieved of her pain. Roentgenograms showed a diverticulosis affecting the proximal half of the transverse colon and the pelvic and sigmoid sections of the colon. Roentgenograms of the stomach taken from different angles showed no abnormalities. The physical examination showed the patient to be otherwise essentially normal except for a slight vaginal discharge. Aside from the additional complaints of severe constipation for eight to ten years and flatulence, she would say that she enjoys good health. Her past history includes an appendectomy and tonsillectomy and adenoidectomy about eight years ago; also a dilation and curettage two years ago. The menses seem perfectly normal. I would be grateful for advice in regard to this patient and for an explanation of her symptoms if one can attribute her complaint to the roentgen data. I have thought of the possibility of coronary disease, but the relief of attacks with change of position and the absence of other symptoms seem definitely to rule out that diagnosis.

M.D., New York.

ANSWER.—This woman has a peculiar clinical picture. However, there are several apparent omissions in the clinical story. In the first place, it is important to know the patient's weight, her habitus, whether or not she has been married and, if so, how many children she has had, what examination of the urine and stools showed, the findings on cholecystography, her blood pressure, and whether there was any leukocytosis during the attacks. It might also be well to have an intravenous pyelogram.

The fact that the patient is relieved by turning on her left side is suggestive of a ptosed or obstructed left renal pelvis. There is a possibility of the left kidney being so loosened from its bed that it "flops" over to the midline and that when the patient turns on her left side it rotates into its normal position. There is no reason for a patient who has an allergic manifestation to be relieved by turning on her left side.

The only other possibility is some peculiar intra-abdominal hernia that might be relieved by the patient's change in position. If the attacks are on the basis of a diverticulosis, the patient should have some localized pain over the region of the diverticula. It is notorious for nonsurgical pain to be related to the genitourinary tract, and, from the facts given, one would have to lean toward this diagnosis.

SERUM PROOFING OF SUTURE MATERIAL

To the Editor:—I would greatly appreciate clarification of the term "serum proofed" suture material. My interest is concerned with the question as to whether such cotton as recommended need be specially processed or used as bought after being sterilized properly.

Ralph Mostwill, M.D., Baltimore.

ANSWER.—Moisture proofing or serum proofing is a process employed for the impregnation of a suture material with wax or waxy substances. Suture materials composed of multiple strands, such as silk, are serum proofed to prevent fraying and consequent breaking and to improve the sliding quality of the knot. Originally wax impregnation or "serum proofing" of silk was performed to delay or prevent the decrease in tensile strength that occurred in the material after contact with the fluids or serum of a wound. This ideal has been only partially fulfilled. Untreated silks when wet decrease in tensile strength from 18 to 39 per cent; treated (serum proofed) silks decrease somewhat less, from 0 to 25 per cent.

Cotton has been shown to increase in tensile strength when wet; hence any process that interferes with complete wetting, such as serum proofing, interferes with the increase in strength that occurs after this material is bathed in tissue fluids. Moreover, serum proofed cottons are 12 to 35 per cent weaker than cottons of similar brand and diameter that have not been so

treated. The deleterious effects of serum proofing of cotton outweigh any of the gains of such processing.

Cotton should be used untreated, boiled for ten to twenty minutes and used while wet. Wetting not only increases the tensile strength of cotton but to some extent prevents fraying and improves the sliding quality of the knot.

PHYTOBEZOAR FROM PERSIMMONS

To the Editor:—An article (Am. J. Surg. 51:432 [Feb.] 1941) by A. L. Cohn and A. S. White reports a case of phytobezoar. I should like to know if any one has determined what part of the persimmon causes the formation of the phytobezoar, if the skin and small divisional membranes have anything to do with the formation of this foreign body and if any one has questioned patients with this condition as to whether they have eaten only the pulp or the entire persimmon. What is the percentage of the occurrence of these foreign bodies in relation to formation of the ulcers?

M.D., California.

ANSWER.—Many theories have been advanced to explain the development of phytobezoars, but one of the most plausible is that presented by Izumi, Isida and Iwamoto (*Jap. J. M. Sc., tr. II, Biochem.* 2:21 [March] 1933). Unripe persimmons contain an astringent, soluble shibuol, a phlobatannin composed of phloraglucon and gallic acid. As the fruit ripens, the shibuol coagulates, becoming insoluble and no longer astringent, but even in the ripe fruit traces of soluble shibuol may be detected, especially under the skin and around the calix. Soluble shibuol is coagulated by dilute mineral acids, and Izumi and his co-workers produced artificial persimmon balls experimentally by incubating small pieces of the fruit in gastric juice. This occurred within a few hours and with no other digestive juice. Izumi and his associates expressed the belief that in the stomach soluble shibuol is transformed into a sticky coagulum which cements the pieces of skin and seeds which may be present into a ball. However, the presence of large amounts of food matter in the stomach interferes with the contact and aggregation of the fragments of the persimmon. Accordingly, an empty stomach and the eating of slightly unripe persimmons or eating persimmons without peeling them predispose to the development of persimmon bezoars. DeBakey and Ochsner (*Surgery* 4:934 [Dec.] 1938; 5:132 [Jan.] 1939) found gastroduodenal ulceration in 23 of 94 collected cases, an incidence of 24.4 per cent.

EARLY METHODS OF TREATING HERNIA

To the Editor:—An intelligent man, now in the seventies, has described for me the successful repair of a reducible inguinal hernia on himself about fifty years ago by a physician named Barnes, who specialized in this work in or near the present city of Glens Falls, N. Y. The technic is the matter of interest. The hernia having been replaced, a needle was passed through the skin, worked "in and out" under the skin, then, having made an exit, was left in place several days, during which time a firmly fitting truss pad was worn. After several days the needle was removed and the pad loosened gradually during the following few weeks. The patient was ambulant at all times. (I presume the operator approximated the various tissues and relied on the needle irritation to bring about union, taking care to avoid puncturing the bowel.) Can you give me any information concerning this technic and its application?

M.D., New York.

ANSWER.—The earliest methods of treating inguinal hernia consisted in incising the skin and pushing a red hot iron into the inguinal canal. A search of the literature shows no reference to the method described, i. e. "passing a needle through the skin and bringing it in and out at various levels along the canal and thereafter applying a truss with the needle in position." Needless to say such a procedure would be hazardous indeed, first because of the danger of injuring the contents of the sac, second because of infection and last because of the hazard of breaking off the needle in the tissues, which in itself would be a calamity. It would seem doubtful if a cure could be effected in this way, as it is a blind procedure.

SULFANILAMIDE AS A BLADDER WASH

To the Editor:—Has a solution of sulfanilamide been used in a bladder wash for uncomplicated cystitis of colon bacillary origin? If so, can you give directions for the amount and strength of the solution and state whether it is used as a wash or an instillation?

Geraldine H. Crocker, M.D., Granville, Ohio.

ANSWER.—Solution of sulfanilamide powder has been used for bladder washings in cases of colon bacilluria. This is used in the form of an 0.8 per cent solution for instillation or lavage. It may be used two or three times daily, or, if the patient is hospitalized, a two way catheter may be inserted and the solution used as a continuous irrigation.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 117, No. 12

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CHICAGO, ILLINOIS

SEPTEMBER 20, 1941

DIAGNOSIS: A RESPONSIBILITY OF THE SURGEON

CHAIRMAN'S ADDRESS

LLOYD NOLAND, M.D.
FAIRFIELD, ALA.

One may be accused of that failing so common in those of advancing years—looking backward rather than forward—but perhaps this may be forgiven when memory turns to one's early days, when the roentgen ray was a curiosity and the wearing of rubber gloves was regarded as effeminate. Those were days when many present day laboratory procedures were unknown and when a blood transfusion was a formidable, if not practically impossible, procedure. In other words, I refer to the days in which surgery was growing up. It was a period which saw an enormous advance in technical skill and the rapid development of new surgical methods, but still the day when any major surgical operation was regarded as an extremely serious matter.

The able surgeon of that period was forced to make a most careful study of each patient; not only to make a diagnosis, but for his own protection he had to analyze each patient with bitter scrutiny to determine that patient's chances of surviving any procedure decided on. In this analysis and at that time there were few, if any, stereotyped laboratory procedures which might give information on the hidden dangers of major surgery (blood chemistry examinations, basal rate determinations, electrocardiograms, roentgen ray examinations and so on). The surgeon was forced to rely largely on his shrewdness of perception and the correlation of certain factors in the patient's examination which chimed with previous experiences in the surgeon's life.

Having no means of estimating risks by any set mathematical formulas, men developed safeguards of their own, their ability of setting a standard of value by the judgment of which the patient might or might not be considered a reasonable risk. It was the surgeon who created and used this standard of values, which actually rested on the interpretation of findings brought to the examiner through the operation of his five senses. In the practice of surgery this must always be true. Despite more recent developments in the technic of physical examination with regard to mechanical devices, the surgeon is wisely guided by the primitive matters referred to, not only when arriving at a diagnosis and in the estimation of risk, but throughout all the steps of an operation as well.

The examining hand has never read a book printed by type, but it has enlarged its scope of usefulness and knowledge a thousandfold. It has partaken of the fruits of mistakes and gained much thereby. It brings news to its possessor beyond all price, at the time when it is needed the most. This one faculty may stand as an example of the value of simple things. Such a thing can never be replaced by any machine-like examination devised by man or by the opinion of a medical colleague.

Has the almost unbelievable advance in the actual art of surgery in the past fifty years tended to make us careless of our responsibility to the patient in the sense that we lose sight of his individuality—the individuality of his disease? Is the science of surgery being lost sight of as the art of surgery develops? Have we centered too much of our attention on how an operation should be done and overlooked the broader problem of whether it should be done at all? Have we lost sight of the fact that the primary goal of surgery is not operation but cure of the patient? Does the development of group practice and large clinics tend again to make surgery the humble handmaiden of medicine, as it was a hundred years ago? Probably not, but any thinking man must be impressed by the fact that all too frequently the diagnosis on which surgery is now undertaken is made by the internist, and that many surgeons operate on such diagnosis alone.

The possibility that operative skill may be more or less born in a certain individual may be admitted, but diagnostic skill and surgical judgment can be acquired only by long experience, careful thought and study, and by honest evaluation of past mistakes as well as successes. There can be no question that the surgeon, in order that he may fulfil his functions in the fullest sense, must possess certain highly individual powers. These are difficult to define, but one of them is bound up in the accuracy with which he is able to estimate the general condition of any or all of his patients as surgical risks. In a limited sense only should his final opinion be influenced by his consultants.

Accurate diagnosis depends on two main factors: first, full and complete information on the patient and his disease; second, interpretation and evaluation of this information. In this last item must be compressed the observations of a lifetime. Information is gained in three ways: from the history of the patient, from the physical examination and from laboratory tests. Evaluation depends on the ability of the surgeon to view the picture as a whole, based on long experience, the fearless consideration of past mistakes and absolute honesty of purpose.

Of the diagnostic methods, inspection and palpation are most important to the surgeon. Inspection, which has the widest application, is the most neglected, prob-

ably because it is the most simple and apparently the easiest. It must never be forgotten that the examiner must see with the mind as well as the eye; that is, he must think as he looks. Inspection forms that part of our examination which is so intimately related to the history. It should be broad and all including. Its interpretation must condition our subsequent conclusions. To quote from Clendening: "Disease leaves its mark upon the look in a man's eye, the mottling of his skin, the swing of his leg, the bend of his back, and the heave of his chest. It is for you to read these signs." Palpation confirms and extends inspection and adds certain information of its own. It informs us as to the degree of pain and tenderness, spasm, fluctuation, heat, consistency of tissues, the presence of masses or tumors, their size, contour and location. The education of the palpating hand is just as important in the making of a preoperative examination as in the exploration of the abdomen or other body cavity. On interruption of the examining hand may depend the life of the patient.

Much information is to be gained from percussion and auscultation, and no surgeon should neglect practice in these special arts. Interpretation of roentgen ray studies has become increasingly important, and the careful and conscientious surgeon will not neglect constant practice in this field or place full dependence on the readings of others.

A broad and comprehensive knowledge of gross pathology is not only invaluable but essential, and this can be acquired only by long practice and study. The "feel" of the tissue in situ, as well as its gross study after excision, if made note of constantly and checked against microscopic findings, is the foundation on which such knowledge is built.

The art of surgery—technical skill combined with a broad knowledge of procedure and technic, together with that special ability to evaluate rapidly any situation and to carry out boldly the judgment formed, is being acquired by a rapidly increasing number of American surgeons. There is danger, however, that the science of surgery—diagnostic skill involving not only the physical examination but a thorough study of the patient as a whole—is being neglected.

If the surgeon can arrive at accurate diagnosis by inspection, palpation and the history and by the same means determine the degree of risk to which it is logical to expose his patient, his students will soon follow in his path.

There is a growing tendency to seek the solution of our problems in medicine and surgery through the means of a chapter in a book or through the medium of some laboratory test. The solution of most surgical problems, as well as accurate evaluation of the risk we plan to bring to our patient, must be based on a far broader view. What we see, feel and elicit from the patient's history, the question of weight loss, pallor, dyspnea on exertion, even the nutritional quality of the muscles of the neck, are all signals of great value. The old saw of the prize ring that when a man's neck withered his number was up might be passed on by the surgeon to his students as applicable to the broad field of surgical risk.

Does every surgeon give full consideration to such questions as the psychologic state of the patient, his reactions, his age, his symptoms, his physical findings and laboratory reports? Is every surgeon allowing himself the time and patience to evaluate fully these findings

to determine the risk involved to the patient as against a reasonable expectancy of cure? When such studies are made on each and every patient before operation, then and then only will American surgeons reach the ultimate goal.

RESULTS OF RADIUM TREATMENT OF CANCER OF THE UTERINE FUNDUS

WITH SPECIAL REFERENCE TO THE MICRO-
SCOPIC GRADE OF THE LESION

ROBERT E. FRICKE, M.D.

AND

CHARLES O. HEILMAN, M.D.

Fellow in Radiology, Mayo Foundation
ROCHESTER, MINN.

The treatment of carcinoma of the uterine fundus is mainly a surgical problem, owing to the slower growth of the cancer, its practical encapsulation for a considerable time within the thick muscular uterine walls and its usually late tendency to metastasize.

However, there is in many instances a choice of treatment. Radiologists have considerable interest in treatment of carcinoma of the uterine fundus, especially in two groups of cases: in the first instance, in extensive malignant lesions too widespread for any curative surgical intervention but susceptible of receiving much help from limited radium therapy; second, in favorable small lesions which would be excisable except for the poor general condition of the patient, often suffering from other serious diseases not related to the cancer.

While much real good can be accomplished in the former group, the second group is also of considerable size and is of greater interest as five year survival may be achieved by well planned treatment.

In 1931 the results of radium therapy at the Mayo Clinic in this condition were reported by Bowling and one of us (Fricke¹), including all cases from 1915, when radium therapy was started, to 1928, inclusive. The five year survival rate in cases in which treatment with irradiation alone was administered by the technic employed at that time was 12.63 per cent. This study analyzes a later group from 1925 to 1935, inclusive, and is concerned with the results of radium treatment alone.

Radium therapy is not an ideal form of treatment for cancer of the uterine fundus. One is trying to destroy a hidden cancer in an enclosed cavity. It is impossible to inspect or determine the exact boundaries or spread of the malignant tissue. All one can be certain of is the fact that the curet has produced demonstrable cancer cells from the uterine endometrium and such information of the extent of the growth as can be obtained by careful pelvic examination. However, good results and cures have been obtained by radium therapy, usually supplemented with roentgen treatment. These have been achieved by divided dose treatments so placed that homogeneous irradiation is applied to the entire length of the uterine canal. Brass tandems containing the radon are inserted first in the depth of the uterus and, on successive treatments, in the midportion and anterior portion of the canal, the number of applications depending on the length of the canal.

From the Section on Therapeutic Radiology, Mayo Clinic.
Read before the Section on Radiology at the Ninety Second Annual Session of the American Medical Association, Cleveland, June 6, 1941.
1. Bowling, H. H. and Fricke, R. E.: Radium as an Adjuvant to Surgery in the Treatment of Carcinoma of the Fundus of the Uterus. *Am. J. Roentgenol.* 26: 738-745 (Nov.) 1931.

The prognosis in any type of cancer treatment is a very important consideration. While, as a rule, we avoid discussing the problem of cure or future tenure of life with a patient suffering from a serious malignant lesion, the family of the patient and her referring physician are entitled to all available knowledge concerning the chance of cure or the extent of palliation that any therapeutic measure is likely to achieve. All of us realize that we have some certain information regarding end results in groups of patients and that each patient may not react typically but is an individual problem. Hence, study of any feature of a malignant disease which helps to analyze the situation and improve our prediction of the result of treatment is of considerable importance.

The prognosis depends mainly on the stage or extent of the malignant lesion when the diagnosis is made, as pointed out by Ward and Sackett² and by many others. This is not so easy to determine in carcinoma of the fundus, where the lesion is hidden, as in carcinoma of the uterine cervix, where inspection and palpation afford a better idea of the tissues involved. Broders'³ grading of carcinoma cells is of considerable importance and, while not fully appreciated as yet, is coming more and more to be of considerable prognostic value.

So far not enough is understood of the significance to enable one to treat a grade 4 carcinoma differently from a grade 1, although in many cases the type of therapy chosen, irradiation or surgical intervention, does depend on this grading. The importance of grading has been brought out recently by Masson.⁴ In the majority of cases carcinoma of the uterine cervix is of grade 3 or 4 and responds readily and quickly to irradiation. The majority of carcinomas of the uterine fundus and of the rectum, however, are of grade 1 or 2.

The general impression has gained ground that cancers of high grade microscopically (grades 3 and 4), although they tend to grow more rapidly and to metastasize earlier, succumb more quickly to irradiation. Low grade cancers (grades 1 and 2), which grow slowly and metastasize late, have gained the reputation of being resistant to irradiation. These impressions undoubtedly have arisen through the study of treatment of cancer of the uterine cervix. The studies of Bowing and one of us (Fricke⁵) have shown, however, that end results of treated cancers of the cervix according to grade are about equal among grades 2, 3 and 4. (There are too few lesions of grade 1 to consider; lesions of grades 3 and 4 predominate.)

However, the excellent results of irradiation achieved in some cancers of the rectum and uterine fundus, which are usually low grade cancers, have prompted us to analyze results of irradiation in the uterine fundus to see if the predominating grade 1 and 2 lesions were not more sensitive to irradiation than generally supposed.

Between 1925 and 1935, inclusive, 330 patients who had carcinoma of the uterine fundus received treatment at the Mayo Clinic. Of this number 115, or slightly more than a third, had no operation performed but were treated entirely with radium or with radium and roentgen rays. This large number were not good sur-

gical risks because of their relatively advanced age (the average age of the irradiated group was 60.6 years) and in 75 per cent of the cases because of the presence of other serious diseases such as obesity, hypertension, cardiovascular disease, secondary anemia and diabetes, along with extensive malignant lesions in most cases (60 per cent of the total were of stages 3 and 4). Twenty-four per cent of the patients treated only with irradiation had no serious concurrent disease but were not subjected to surgical intervention because the lesion was inoperable.

As mentioned in a previous paragraph, the stage or extent of the lesion at the time of treatment is a major consideration in determining prognosis. This is well borne out in studying the results of the 109 cases traced for at least five years in which treatment was by irradiation only. As one would expect, the majority were in an advanced stage of the disease. While "stage" is not as definite as in carcinoma of the cervix, we follow the outline used in a previous study. Briefly, in stage 1 the lesion was limited to the uterine cavity within the level of the internal os. The uterus was movable and not enlarged. In stage 2 the uterus usually was increased in size, the lesion infiltrating deeply the fundal walls. The uterus was still movable. In stage 3 there was

TABLE 1—*Histopathologic Characters of Carcinoma of the Fundus, 1925-1935*

	Patients		Lived 5 Years	
	Number	Per Cent	Number	Per Cent
..	82	75	35	43
	12	11	7	17
	6	6	2	50
Sarcoma	2	2	1	50
No tissue	7	6	1	14
Total	109	100	42	39

definite infiltration of the parametrium on one or both sides with limited mobility of the uterus, or infiltration of one parametrium with fixation of the uterus or infiltration of a large part of the cervix with or without involvement of the vaginal walls, or in some cases isolated metastasis in pelvic nodes accompanying a small primary growth. In stage 4 the uterus was enlarged and fixed; remote metastasis or general carcinomatosis was present in some cases.

As many patients are referred after treatment given elsewhere which has modified the lesion definitely (cautery, radium, roentgen rays), we have divided our patients into a primary and a modified or previously treated group. Of the 109 traced cases in which treatment was by irradiation alone, 93 were in the primary group and 16 in the modified group. Of the 93 primary lesions, 57 per cent were of stages 3 and 4. Of the modified lesions 75 per cent were of stages 3 and 4. Considering the primary and modified cases together, the five year cure rates were as follows: 93 per cent in stage 1, 52 per cent in stage 2, 34 per cent in stage 3, and 6 per cent in stage 4.

Although, in the majority of these patients the lesion was well advanced (only 15 of the 109 were stage 1), and most of them had serious concurrent diseases, the risk of treatment proved reasonably small. Complications occurred during treatment in 10 patients or 9 per cent of the total of 115 (including 6 patients not subsequently traced). Among these 10 patients with complications there were 3 hospital deaths, a treatment mortality of 2.6 per cent, and of these 1 died of a cause not related to cancer or to the treatment.

² Ward, G. G., and Sackett, N. B. Results of Radiation Therapy for Carcinoma of the Uterus at the Woman's Hospital, New York, 1919-1932. *J. A. M. A.* **110**: 323-326 (Jan. 29) 1938.

³ Broders, A. C. The Grading of Carcinoma. *Minnesota Med.* **8**: 726-730 (Dec.) 1925. The Grading of Cancer: Its Practical Value, editorial, *Am. J. Clin. Path.* **5**: 254-256 (May) 1935.

⁴ Masson, J. C. Carcinoma of the Uterus. *New Orleans M. & S. J.* **82**: 235-243 (Nov.) 1939.

⁵ Bowing, H. H., and Fricke, R. E. Radiosensitivity of Malignant Neoplasms of the Uterine Cervix. *J. A. M. A.* **111**: 1902-1906 (Nov. 19), 1918. Bowing, H. H. Carcinoma of the Cervix Uteri. Factors Influencing Prognosis. *Minnesota Med.* **23**: 85-93 (Feb.) 1940.

Microscopic examination of the curetted material was made in all but 7 cases. In these 7 cases the lesions were modified, and characteristic tissue was not obtainable. All but 1 of these patients succumbed to cancer shortly after treatment.

The histopathologic characters of the remaining cases and the five year survival rates are listed in table 1. In 75 per cent of all the cases the diagnosis was adenocarcinoma and in 11 per cent it was squamous cell epithelioma, with a scattering of lesions called carcinoma and sarcoma. The five year survivals were 43 per cent in the adenocarcinoma group, but only 17 per cent in the squamous cell epithelioma group.

Finally, the grade of the malignancy in the 109 traced cases in which treatment was with irradiation alone showed a predominance of grade 1 or grade 2 over the higher grades. As may be seen in table 2, grades 1 and 2 were 56 per cent of the total, and grades 3 and 4 were 31 per cent.

The five year survival rate showed a definite relation to grade of malignancy, the survival rate decreasing as the grade increased.

TABLE 2.—Grade of Malignant Change in Carcinoma of the Fundus, 1925-1935

	Patients		Lived 5 Years	
	Number	Per Cent	Number	Per Cent
Grade 1	19	17	15	79
Grade 2	42	39	14	33
Grade 3	16	15	4	25
Grade 4	17	16	2	12
Malignant but not graded	8	7	6	75
No tissue	7	6	1	14
Total	109	100	42	39

COMMENT

While the importance of the stage or extent of carcinoma of the uterine fundus in prognosis is well known, the significance of the pathologic grade of the cancer cell is not so well understood. While most lesions nowadays are graded under the microscope, the significance of the grade is little appreciated. One treats adenocarcinoma just as one does squamous cell epithelioma, and low grade cancer the same as high grade cancer. In general, lesions of low grade are considered resistant to irradiation and surgical intervention generally is advised, probably owing to the favorable experience in the treatment of high grade cancers of the uterine cervix.

In this particular group of cancer of the uterine fundus, predominantly low grade, all treated by radium and followed up, the cures vary with the microscopic grade of the lesion, grade 1 lesions showing the largest percentage of cures and grade 4 the smallest. Hence, from this study we feel that consideration of the grade of the lesion should be an additional prognostic factor in the irradiation of carcinoma of the fundus.

SUMMARY

Cure of cancer of the uterine fundus is mainly a surgical problem, owing to the slow growing, less malignant features inherent in cancer in this location. Irradiation often is deemed ineffectual in malignant lesions of low grade on microscopic examination.

However, radiologists often are called on to treat many cancers of the uterine fundus, either because the lesion is extensive and beyond surgical help or because the advanced age of the patient or the presence of serious concurrent disease entails too great a surgical risk.

The present study analyzes the results in 109 patients treated with radium or with radium and roentgen rays during the eleven year period 1925 to 1935, inclusive. Approximately a fourth of this group were denied surgical intervention because the lesion was extensive and inoperable. In the remainder the lesions were less extensive but were not subjected to operation because the surgical risk was considerable owing to the advanced age or poor general condition of the patient or the presence of other serious disease.

Carefully planned intensive broken dose radium therapy achieved five year cure in 39 per cent of the 109 patients.

Probably the stage or extent of the malignant process, difficult as it is to determine with any accuracy, is still our best prognostic guide. For example, results of radium treatment at the Mayo Clinic from 1915 to 1928, inclusive, reported by Bowing and one of us (Fricke¹) showed five year cures in 102 cases in which treatment was only by radiation to be 12.63 per cent; 80, or 78 per cent, of these lesions were of stages 3 and 4. In the present study of data on 109 patients treated only by irradiation, 39 per cent gained five year cures but only 60 per cent of the lesions were of stages 3 and 4. In other words, this study presents the results of irradiation in a more favorable group of cases with less extensive lesions.

However, we found the microscopic grade of the lesion to be also a valuable prognostic guide. We were especially interested in the results of irradiation in a low grade malignant condition regarded generally as radioresistant and to be treated surgically whenever possible. We were agreeably surprised to find the five year cures directly related to the grade of the lesion; grade 1 yielded by far the best results and grade 4 the smallest number of cures.

CONCLUSION

While we believe that cancer of the uterine fundus should be treated surgically where possible, we feel that, where there is definite surgical risk, irradiation offers a distinct chance of cure. The less extensive the lesion, the greater the chance of cure. Also lesions of low grade microscopically have the best chance of cure. In the past physicians have been unduly pessimistic of the results of irradiation in low grade malignant lesions. In this series the lesions do not appear to have been radioresistant.

ABSTRACT OF DISCUSSION

DR. U. V. PORTMANN, Cleveland: The authors show that the microscopic grading of tumors is indicative of curability. They report that 30 per cent of their patients were irradiated because there were indications that the malignant tissues could not be removed surgically, or the patients were in such poor physical condition that operations would be unduly hazardous. They found that the proportion of five year survivals of the patients treated with radiation had direct relationship to the extent of involvement in the following ratios: group 1, 93 per cent; group 2, 52 per cent; group 3, 34 per cent, and group 4, 6 per cent. The histologic grading of the tumors also had similar relationship to extent in that the five year survival rate were in the proportion of grade 1, 79 per cent; grade 2, 33 per cent; grade 3, 25 per cent, and grade 4, 12 per cent. At the Cleveland Clinic between May 1921 and May 1941, 260 patients were treated; 29 per cent by operations alone, 53 per cent by radiation including radium or roentgen rays and a combination of these methods, and 18 per cent by operations plus radiation. In our experience, 50 per cent of the group 1 patients survived

five years, but 100 per cent of patients in the same category receiving operation alone lived that long. This suggests, as pointed out by the authors, that it often is difficult to irradiate the uterine fundus adequately with radium. We also can show practically no difference in the curability of group 2 patients by irradiation as compared with those having operation alone, but more group 3 irradiated patients survived. However, it should be noted that many irradiated patients could not have been operated on because of the extent of involvement or other contraindications to operations; yet it appears that the lives of some patients were prolonged by irradiation. Our experience in regard to the total five year survival rates for all methods of treatment, according to the extent of involvement from cancer of the uterine fundus, confirms most statistical reports similarly analyzed; namely, group 1, 73 per cent; group 2, 51.8 per cent; group 3, 87 per cent, and a total rate of 45.6 per cent. These results indicate that the extent of involvement of cancers of the uterine fundus is the most significant factor governing prognosis, no matter what may be the histologic grades of the tumors and the methods of treatment employed.

DR. ROBERT E. FRICKE, Rochester, Minn.: In reply to Dr. Portmann's question with regard to roentgen therapy, in our series the use of radium formed the basis of treatment, but roentgen therapy was also employed in about two thirds of the cases. I am glad that Dr. Portmann is treating more patients who have carcinoma of the uterine fundus with radiation in contrast to those for whom surgical intervention is the chief form of attack. Apparently he has impressed the surgeon, and especially the gynecologist who first examines these patients, with the good results which can be safely attained by careful technic from radiation therapy. I hope that in the future we can be as successful.

ELECTROENCEPHALOGRAPHY

HALLOWELL DAVIS, M.D.

BOSTON

Electricity and electrical instruments have become commonplace features of present day life. Electric light, telephones, radios and electric motors are all about us, and "volts" and "amperes" are so familiar as to appear even in the comic strips of our daily newspapers. Electrical ways of doing things are numerous in the operating room, the clinic and the laboratory, from electrocautery and diathermy to roentgen ray and electrometric titrations. But few electrical instruments in the hospital, with the outstanding exception of the electrocardiograph, represent true contributions of physiology or, more particularly, electrophysiology to medicine. Most of our other electrical instruments are useful tools with which the healthy body can be studied or the sick body treated, but they do not deal primarily with the electrical phenomena or properties of the body itself.

Electrophysiology has been willing and eager to make its contributions, sometimes in fact even too eager, but its misfortunes have been that for the most part the electrical phenomena and properties have proved too subtle or too complex or too remote from primary disease processes to make them of much practical value. It is true that measurement of the electrical excitability of peripheral nerve yields some useful information in conditions of tetany and of muscular degeneration; but the concept of chronaxia, so loudly heralded from France, has been disappointing in its application, and its theoretical basis has been seriously questioned. Sometimes what might be a useful electrical approach

has been properly disregarded because simpler or more familiar methods yield equally useful information. Such has been the fate of the measurement of electrical impedance of the skin in hypothyroidism and of the electromyogram in the study of muscular paralysis, tremors and athetosis. The possibilities of these methods are not yet exhausted, but we cannot yet point to them as very significant contributions. The hopes held out recently for the electrical detection of ovulation in the human being seem to have been premature, for, although a slight electrical change associated with the rupture of the ovarian follicle can be detected under favorable conditions in small laboratory animals, the successful application of the method to the study of the ovarian cycle in man now seems a forlorn hope. The finger to finger potentials that at first appeared so promising are complicated by a host of extraneous factors, and work with which I have been associated, now in preparation for publication, casts serious doubt on the possibility that there is any significant connection between finger potentials and the ovarian cycle.

Electrocardiography, on the other hand, represents an application of electrophysiology to a medical problem that is so successful and so well established as to need no further elaboration. The electrical potentials generated by the heart itself in its normal cycle of activity are recorded, and, thanks to principles established by animal experimentation and to tireless correlation between the electrical records and clinical findings and autopsy reports, the meaning of one feature after another of the electrocardiogram, both normal and abnormal, has been established. Much information as to the condition of the heart, now readily and reliably obtained by electrocardiography, can otherwise be obtained only by more difficult and devious methods, if indeed it can be obtained at all.

By an analogy with electrocardiography we hold great hopes for the latest offering of electrophysiology to medicine, electroencephalography. The brain, like the heart, generates electricity in the course of its activity, and now, thanks to improvements of electrical instrumentation and technic borrowed from radio and television, we can record the cortical potentials from the surface of the scalp with no discomfort or inconvenience to the patient. This electrical output of the cerebral cortex is the most direct objective indicator of cortical activity now available. The end results of cortical activity in the form of behavior of the individual or his subjective experiences may be perfectly real, just as blood pressure, venous pulse or pulmonary edema are real end results of cardiac activity, but the connection of particular aspects of behavior with the function of particular portions of the cerebral cortex is uncertain or indirect. Interpretations as to the physiologic (or pathologic) state of the cortex are actually based on empirical correlations, not on direct physical signs or indications of what the cortex itself is doing. It is because of just this lack of direct immediate physical manifestations corresponding to heart sounds and to mechanical pulsations of the blood vessels that electroencephalography has its great opportunity. The most complex organ in the body works silently and without mechanical movement, but it can be spied on nevertheless by detection and interpretation of its electrical output. Therefore electroencephalography has the opportunity of being of greater service to the neurologist and the neurosurgeon than electrocardiography is to the cardiologist. The question is whether the electrical

output of the brain is sufficiently regular, lawful and simple to be comprehended and understood and whether the differences produced by disease or mechanical interference are great enough and characteristic enough to be susceptible of sure detection.

Fortunately the first condition of regularity and relative simplicity is partially fulfilled. The patterns of electrical pulsations that appear in our written records are complex, to be sure, but the waves and the patterns that they form are by no means random. Certain wavelengths and certain definite rhythms strongly dominate the usual normal records. The voltages are circumscribed within quite definite limits. Inevitably we compare the electroencephalogram with handwriting, each word different from what comes before and after, yet made up of the letters of a limited alphabet. Each person has his own style or character of electroencephalogram just as he has his own style of handwriting, and, like his handwriting, it changes relatively little with age once he has reached adulthood. In some persons the voltage is a little higher, in some the dominant (so-called alpha) rhythm a little faster or slower or a little less regular, and in others there is less "alpha" activity and more of the smaller, faster waves, but we have now reached the stage of having delimited with some confidence the range of normal patterns and of

of electroencephalographic patterns apparently represent constitutional differences and there is an increasing body of evidence that certain aspects of habitual behavior or "personality" may correlate with extremes of pattern.³ Here may lie the basis of a future application of electro-

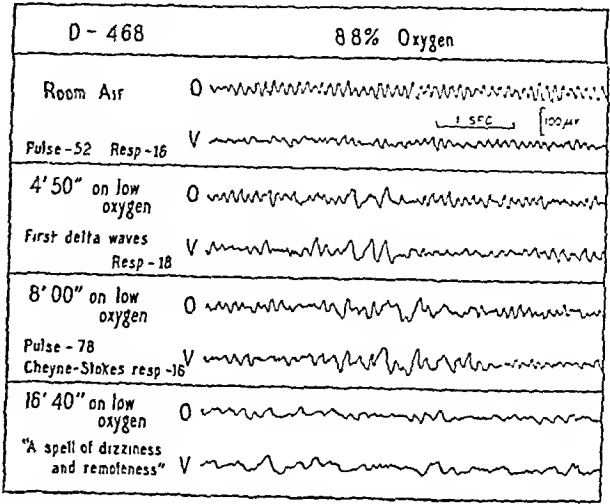


Fig. 2.—Progressive changes under low oxygen tension (From an experiment by Davis, Pauline A.; Davis, Hallowell, and Thompson, J. W.: *Am J. Physiol.* 123: 51 [July] 1938.)

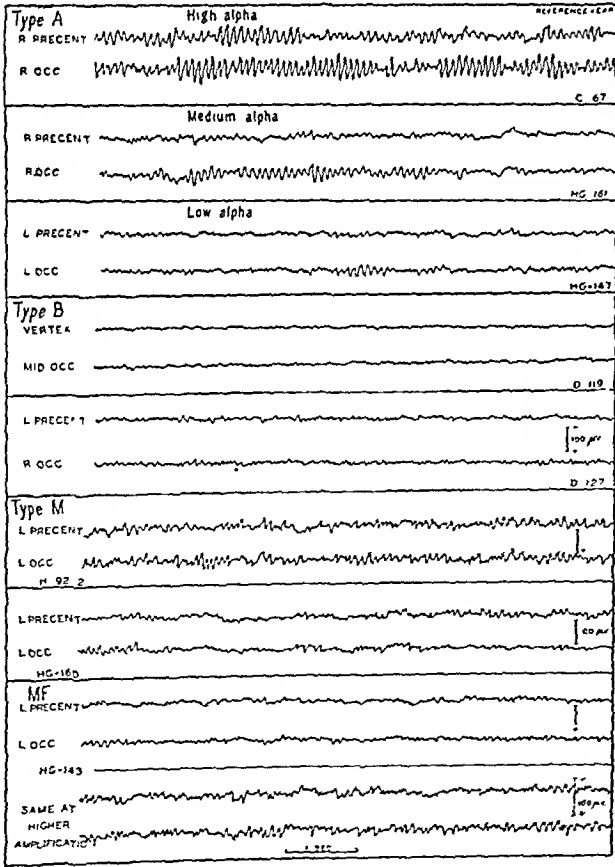


Fig. 1.—Normal electroencephalographic patterns. Standard conditions, eyes closed. Monopolar, unfiltered. (From Davis¹)

subdividing them into fairly definite types (fig. 1).¹ It is of great interest that identical twins always have closely similar patterns of the same type.² The types

encephalography; but at least we already know reasonably well the range of normal variation and the alterations produced by sleep, by anesthetic drugs, by convulsant drugs, by lack of oxygen (fig. 2), by low blood sugar and by many other normal and abnormal conditions. And as a generalization we can say that the various conditions of depressed or reduced physiologic activity are associated with the appearance of slower waves, often of very considerable voltage and perhaps in quite definite groups and patterns, and that increased activity, overexcitability and overstimulation are associated with a reduction in the usual alpha activity and, if extreme, with an increase in faster rhythms and the appearance of sharp, brief "spikes," either singly or in rapid sequences.⁴

One of the two important practical uses of electroencephalography is the detection and localization of intracranial lesions. The principle, first applied by Walter,⁵ is extremely simple. Numerous electrodes are placed in various positions on the scalp and are connected systematically to a multichannel recorder that writes simultaneously the electroencephalogram of from three to six different regions (fig. 3). If abnormal waves appear under standard normal conditions it is an indication of abnormality somewhere, and if the abnormal waves appear from only one or two regions of the head it tells us how and where the abnormality is localized. A tumor or a hematoma does not generate abnormal electrical waves, but it compresses the neighboring brain tissue and induces edema, partial anoxia or some other condition of physiologic depression; and slow, high voltage electrical waves appear from the partially damaged tissue around the tumor or hematoma. A contracting cicatrix may irritate and excite the brain

1. Davis, Pauline A.: *J. Neurophysiol.* 4:92 (Jan) 1941.
2. Davis, Hallowell, and Davis, Pauline A.: *Action Potentials of the Brain in Normal Persons and in Normal States of Cerebral Activity.* *Arch Neurol & Psychiat.* 36: 1214 (Dec.) 1936

3. Saul, L. J.; Davis, Hallowell, and Davis, Pauline A.: *Tr. Am. Neurol. A.* 1937, p. 167. Davis, Pauline A.: *Am J. Psychiat.* 96: 851 (Jan.) 1940. Also Davis, Pauline A., in preparation.
4. It is impossible adequately to illustrate the range of normal and abnormal electroencephalographic patterns and the various alterations referred to in the text. The interested reader is referred to the "Atlas of Electroencephalography" by F. A. Gibbs and Fritz L. Gibbs (privately printed, 1941).
5. Walter, W. G.: *Lancet* 2: 305 (Aug 8) 1936

locally and generate sharp spikes from a restricted region.⁶ A large tumor or extensive cortical atrophy may cause an unsymmetrical reduction in voltage from one or another part of the head.⁷ Superficial cortical lesions cause the greatest changes in the electroencephalogram, since most of the electrical activity recorded from a scalp electrode is generated in a relatively restricted area within an inch or so of the electrode. Of course a deep seated lesion may indirectly modify the normal activity of the cortex, but in this case the abnormal pattern is usually quite widely and diffusely distributed. The degree of practical success of the method is illustrated by the following summary by Dr. R. S. Schwab⁸ of a follow-up of 417 electroencephalographic localizations made at the Massachusetts General Hospital. In 115 cases the localization by electroencephalography was clear and definite and was so reported. Verification by operation or post-mortem examination showed correct localization within the area of surgical incision in 84.5 per cent of this group. In 89 cases in which there was considerable doubt as to the interpretation of the electroencephalogram, but in which the best guess possible was made at the surgeon's request, the accuracy was only 43 per cent. This group contains the majority of cases with lesions in the posterior fossa. Such lesions, particularly when they cause increased intracranial pressure, may be very deceptive for the electroencephalographer and even lead him to a false localization. In 213 cases no evidence of focal lesion was found. Operation or post-mortem examination has actually revealed a focal lesion in 9 per cent of these cases. Most of the remaining 91 per cent have not come to operation or autopsy table, but the present hospital diagnoses support the electro-

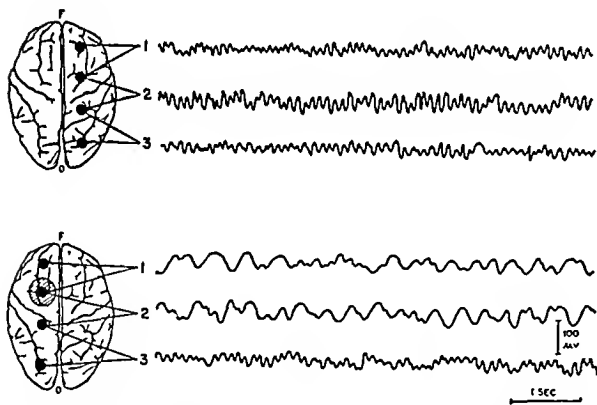


Fig 3—Records taken from the scalp of a patient with a left mid parietal lesion. Three units are recording from the head. In the upper three tracings, electrodes are placed in an anteroposterior position in the right hemisphere. A normal rhythm of about ten per second is seen. In the lower three tracings, similar leads are used in the left hemisphere. Large slow waves of one or two per second are present in leads 1 and 2. The normal ten per second rhythm is absent. The slow waves in lead 2 form a mirror image of those in lead 1, indicating that the focus of discharge is originating under the electrode which is common to leads 2 and 1. (From Williams and Gibbs⁹)

encephalographic report. Schwab's degree of success is substantially in accord with the earlier reports by Williams and Gibbs⁹ and by Yeager and his associates.¹⁰ Schwab notes common sources of error in

his series as, first, the failure to use a sufficient number of electrodes; second, the bilateral type of disturbance caused by deep lesions near the midline; and, finally, contrecoup pressure effects produced by large flat lesions (i. e. subdural hematomas) outside the cortex.

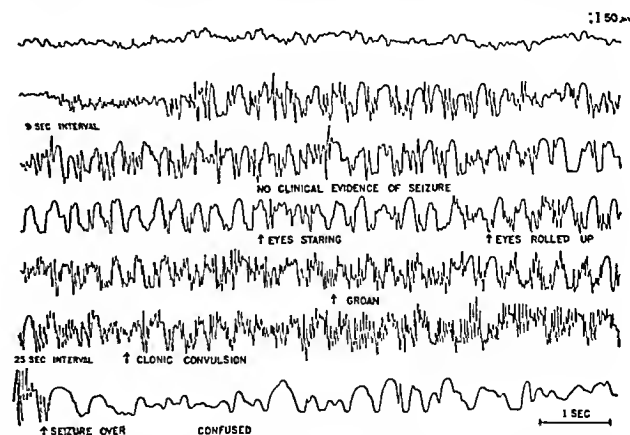


Fig 4—Grand mal seizure (patient C. G.) Active electrode over left frontal area (From Gibbs, F. A.; Lennox, W. G., and Gibbs, Erna L.: *The Electroencephalogram in Diagnosis and in Localization of Epileptic Seizures*, Arch Neurol & Psychiat 36:1225 [Dec 1] 1936)

The principles of localizing cortical lesions by electroencephalography are simple, but the actual procedure requires care and experience, like the taking and interpreting of roentgenograms, to avoid being misled by artefacts due to movements, bad electrical contacts, muscle potentials and the like. And the method must always be regarded as simply another laboratory test whose results must be intelligently combined with information derived from clinical symptomatology, neurologic examination and roentgen ray studies. We may sum up the situation by saying that the accuracy of detection and localization of lesions in suggestive cases is about as good by electroencephalography taken alone as by roentgenography taken alone or by neurologic examination without roentgenography or electroencephalography. But when positive indications from any two of these methods agree, then the errors in localization are very rare.

The electroencephalogram tells little or nothing of the nature of the lesion, for what we really see is the reaction of the neighboring tissue to the effects, usually the mechanical effects, of the lesion. But even the mere fact that there is such a reaction may be helpful in deciding when, for example, a patient should leave the hospital following cerebral concussion or skull fracture, and perhaps it will aid in prognosis in conditions such as encephalitis.

Another major contribution of the electroencephalogram is the improved diagnosis of epilepsy and an increased understanding of the nature of epilepsy and its genetic characteristics. An epileptic seizure, whether it is a generalized convulsion or a brief lapse of consciousness, is nearly always, if not invariably, accompanied by dramatic changes in the electroencephalogram (fig. 4). The convulsive seizure is associated with the appearance of sharp fast waves of moderate to high voltage in rapid sequence with or without the presence of slow waves in addition. It is most significant that this excessive electrical discharge, obviously the picture of overactivity, usually begins many seconds before the muscular movements or loss of consciousness. And the epileptic patient between seizures will frequently show in the electroencephalogram spikes or runs of fast

6. Jasper, H. H., and Hawke, W. A.: *Electroencephalography*, Arch Neurol & Psychiat. 39: 885 (May) 1938

7. Rubin, M. A.: *Proc. Soc. Exper Biol & Med* 40: 153 (Feb) 1939.

8. Schwab, R. S.: Read before the American Academy of Physical Medicine, New York, April 29, 1941.

9. Williams, D. J., and Gibbs, F. A.: *New England J Med.* 218: 998 (June 16) 1938.

10. Yeager, C. L.; Baldes, E. J.; Crag, W. McK., and Woltman, H. W.: *Proc. Staff Meet., Mayo Clin.* 15: 147 (March 6) 1940

waves resembling the preliminary outburst that precedes his convulsion, but without a sign or symptom associated with them. These subliminal sputterings have been termed "abortive" or "larval" seizures. The patient is unaware of them, but they are diagnostic of a susceptibility to seizure, and in a patient subject to seizures

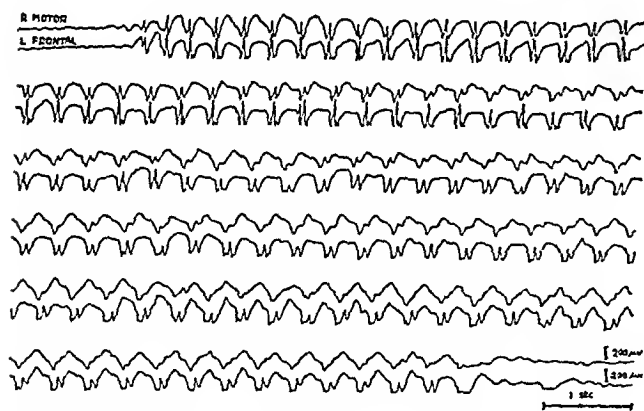


Fig. 5—Petit mal seizure (patient O. V.). (From article cited in legend to figure 4.)

an increase in number and intensity of the larval outbursts may give warning of an approaching convulsion hours or even days in advance.¹¹

The lapse of consciousness, with or without minor muscular movement, known as petit mal shows an equally dramatic and characteristic electrical counterpart (fig. 5). Large slow waves at a frequency of almost exactly three a second, with one or sometimes several sharp spikes alternating with the slow waves, are the most characteristic pattern. Sometimes the fast waves are missing, sometimes the frequency is not exactly three a second, and each person, particularly each adult, tends to show his own minor variations of pattern. It is as if each patient were writing his diagnosis on the record but that each wrote the same words in his own handwriting. The pattern of the petit mal "dysrhythmia" (to employ Lennox's term) is a curious mixture of indications of depression and of excitation; and it should be emphasized that although typical patterns may be described as corresponding to grand mal and petit mal respectively the situation is seldom so clear and simple. Most actual seizures are composite and show mixtures of grand mal and petit mal patterns or else more or less distorted variants of the petit mal type. What is important is that during a petit mal seizure, as during a major convulsion, there is an obvious and fairly characteristic disturbance of the electrical record and also that the susceptibility to petit mal is usually revealed by the appearance of larval seizure patterns between the actual clinical lapses.

Another variety of "cortical dysrhythmia" tends to be associated with the so-called psychomotor type of seizure in which the patient does not completely lose control of himself or become unconscious. The most characteristic electrical rhythm is about six rather than three a second and the waves are often unsymmetrical and monophasic (fig. 6).¹² Many varieties of electrical pattern and many gradations of odd or unusual behavior are seen, and the clear diagnostic electrical patterns and definite clinical manifestations merge gradually into

what are called "generally dysrhythmic electroencephalograms" and "behavior problem" individuals. The high incidence of dysrhythmic electroencephalograms in problem children has been pointed out,¹³ and here is a problem deserving much further study.

The nature of epilepsy has been clarified by the realization, stated clearly by Lennox, Gibbs and their associates, that the epileptic seizure is accompanied by a severe electrical "storm" in the central nervous system, a "paroxysmal cerebral dysrhythmia"; that patients subject to seizures show more or less of a milder form of cerebral dysrhythmia, perhaps continuous, perhaps episodal, in the intervals between seizures; but furthermore that many men and women who have never had seizures also show the same general types of cerebral dysrhythmia. Irregularity of the electrical activity of the cortex is not epilepsy but it reveals the soil in which epilepsy grows. Lennox suggests that it is primarily those with the dysrhythmic electroencephalograms who develop secondary or symptomatic epilepsy following an injury to the brain.¹⁴ Equally important is the fact, now fairly well established, that the cerebral dysrhythmia is a hereditary characteristic that is almost always to be found in the epileptic individual, himself and among his blood relatives. Here, apparently, is the hereditary element in epilepsy—the potentiality for seizures that is far more common and widespread in the population than the incidence of actual seizures.¹⁵ What it is that determines whether or not the person who inherits the cerebral dysrhythmia will or will not suffer from seizures one cannot say. Is it a second independent hereditary element or is it some purely environmental factor? Sometimes the dysrhythmia may be very pronounced but completely asymptomatic, but sometimes, on the

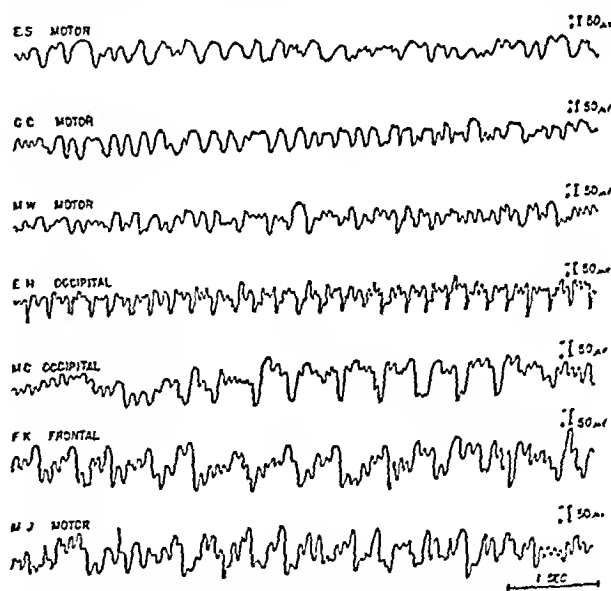


Fig. 6—Wave formations occurring in psychomotor seizures (From Gibbs, Gibbs and Lennox.¹³)

other hand, the seizure may come, like lightning from a summer sky, in the midst of a comparatively stable and regular record.

11. Gibbs, F. A.; Gibbs, Erna L., and Lennox, W. G.: *Brain* 60: 377 (Dec.) 1937.

12. Gibbs, F. A.; Gibbs, Erna L., and Lennox, W. G.: *Cerebral Dysrhythmias of Epilepsy*, *Arch. Neurol. & Psychiat.* 39: 298 (Feb.) 1938.

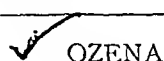
13. Jasper, H. H.; Solomon, Philip, and Bradley, Charles: *Am. J. Psychiat.* 95: 641 (Nov.) 1938. Lundley, D. B., and Cutts, Katherine K.: *Electroencephalograms of "Constitutionally Inferior" and Behavior Problem Children*, *Arch. Neurol. & Psychiat.* 44: 1192, 1940.

14. Lennox, W. G.: *Science and Seizures*, New York, Paul B. Hoeber, Inc., 1941.

15. Gibbs, Erna L., and Gibbs, F. A.: *Inheritance of Cerebral Dysrhythmia and Epilepsy*, *Arch. Neurol. & Psychiat.* 44: 1155 (Dec.) 1941.

And, finally, the electroencephalogram may be useful in the treatment of epilepsy.¹¹ Not that in itself it is in any way a cure, but it may be used to determine what drugs and what dosages are best suited to the needs of a particular case. The number and prominence of larval subclinical episodes as well as the number of overt seizures is greatly reduced in most cases by appropriate medication with bromides, phenobarbital or phenytoin. But instead of waiting for weeks or months to determine the effectiveness of a different combination or an altered dosage we may now gain an indication in a few days of the effectiveness of the medication by simply observing the degree of stabilization of the electroencephalogram.

In the interpretation of the electroencephalogram much still remains to be explained and there are many partial contradictions to be clarified. But on the whole the trend is clear and we may justly claim that electrophysiology has given new insight into the mechanism and nature of the actual seizures of epilepsy and also into the hereditary constitution which underlies the occurrence of epilepsy.



OZENA

M. M. CULLOM, M.D.
NASHVILLE, TENN.

Ozena is called also atrophic rhinitis, atrophic catarrh, coryza foetida and sclerotic rhinitis. However, the favorite and common term is "the opprobrium of medicine." The Germans, with their genius for expressing delicate shades of meaning and their natural use of euphemistic terms, call it "stink nose." Because of the voluminousness of the literature, this review will be limited to the etiology. The report to the Madrid congress by Leroux-Robert and Costiniu¹ contains one hundred and seventeen pages, and a total of two hundred and seventy-nine papers are listed, mostly by continental authors and mostly written since 1920, have appeared in the literature. If the true cause of ozena is ascertained, this most distressing disease, with all its pathologic and social implications, may well be eliminated.

St. Clair Thomson² has succinctly stated that ozena is a chronic rhinitis characterized by atrophic changes in the nasal mucosa and the turbinal bodies, abnormal roominess of the nasal passages and a mucopurulent discharge which tends to dry into crusts with a characteristic odor but does not involve ulceration or necrosis.

Wyatt Wingrave³ gave a classic description of the pathologic changes of ozena: (1) transformation of columnar ciliated and special olfactory cells into stratified squamous epithelium, (2) disappearance of the basement hyaloid membrane, (3) presence of special hyaloid cells and pigment masses, (4) changes in the glands, (5) changes in the lymphoid tissue and the blood vessels and (6) changes in the bone.

THEORIES OF CAUSATION

In most cases ozena begins before the age of 12 years; it seldom starts after 25. The majority of observers have said that the disease is five times as

common in females as it is in males. Among the conditions which have been considered the exciting cause are the following:

1. Too great shortness and width of the nostrils.
2. The purulent rhinitis of childhood (Bosworth, Lambert Lack, C. A. Parker).
3. Osteitis affecting the ethmoid bone and adjacent tissue.
4. Rarefying osteitis of the inferior turbinate bones with secondary atrophy of the mucosa (Cholewa and Cordes).
5. Disease of the accessory sinuses (Miehel, Loewenberg, Grünwald, Hajek, St. Clair Thomson).
6. Focal suppuration in the nose, the accessory sinuses or the postnasal space (Grünwald).
7. Atmospheric desiccation and bacterial invasion.
8. A deficiency state.
9. Infection due to the coccobacillus (Loewenberg), *Bacillus mucosus* (Abel), *Bacillus foetidus ozaenae* (Hajek), *Coccobacillus foetidus ozaenae* (the Perez bacillus), *pseudodiphtheria bacillus* (Belfanti and delle Vedova).
10. Syphilis or tuberculosis.

I believe that the authors who name the purulent rhinitis of childhood suppuration in the accessory sinuses, a focus of chronic suppuration in or around the nose or a rarefying osteitis of the ethmoid bone actually are in agreement. If they are, the theory of focal suppuration is the most important and influential of the theories propounded. The investigators supporting it include some of the most distinguished rhinologists. The Madrid report stated that this theory was an ancient one. Vieussens and Reiningger held it at the end of the seventeenth century. I have the views of Vieussens in Latin, and his language is impressive. In the modern era, Michel, of Berlin, gave the theory his strong support in his textbook published in 1876. A little later Grünwald amplified it by supporting the thesis of focal suppuration in the nose, the accessory cavities or the postnasal space. Loewenberg came to the support of the theory by reporting 79 cases of ozena in all of which he had found sinus disease.

The foundation on which rests the theory of suppuration in the sinuses is the observation of Bosworth that the purulent rhinitis of childhood is the cause of ozena. He first propounded his theory at the international congress of London in 1881. Later he said:⁴

"... we meet with a large number of cases, which commence in the earlier years of childhood, in which the disease pursues an essentially chronic course, and in which a purulent discharge is the prominent feature. It is purely local in character, dependent on no constitutional dyscrasia, and consists essentially in an increased secretion of mucus in the earlier stages, together with a rapid desquamation of epithelial cells, which, running its course as a purulent disease, in from five to ten years, develops finally into what is known as atrophic rhinitis.

To me this is the most illuminating statement in the literature of atrophic rhinitis. It must be assumed that Bosworth had followed his patients from the time he first observed them in early childhood, through five or ten years of purulent rhinitis, to the stage of the disease called atrophic rhinitis. There was one stream which he did not cross but which can be bridged for him. Between him and the sinusitis theory was the objection that was stated again and again and was a stumbling block to many eminent men, including Hajek and St. Clair Thomson, namely their belief that at the time at which purulent rhinitis appeared the sinuses were undeveloped. It is now known that in childhood the antrums and the ethmoid and sphenoid sinuses are

Read before the Section on Laryngology, Otology and Rhinology at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 5, 1941.

1. Leroux-Robert and Costiniu: *L'ozène*, Rev. de laryng. 133: 49 (Jan.); 172 (Feb.) 1933.

2. Thomson, St. C.: *Diseases of the Nose and Throat*, London, Cassell & Co., 1911.

3. Wingrave, Wyatt: *Atrophic Rhinitis (Ozaena) and Tuberculosis*, J. Laryng. 9: 96 (Feb.) 1894.

4. Bosworth, F. H.: *A Treatise on Diseases of the Nose and Throat*, New York, William Wood & Company, 1889.

developed and that the exanthematous diseases of childhood and epidemic influenza leave many children with purulent sinusitis.

Kelly,⁵ of Glasgow, made this observation:

Anatomical investigations, postmortem examinations, and clinical experience all go to prove that the accessory sinuses of the nose, even in early infancy, may be the seat of inflammatory and suppurative processes. The infection causing these comes oftenest from tonsils and adenoids, acute colds, measles, scarlet fever, diphtheria and pneumonia.

Many rhinologists do not accept the purulent sinusitis theory but do hold that in most cases atrophic rhinitis follows such diseases as scarlet fever, measles, diphtheria and epidemic influenza.

In 1908 a symposium on ozena was held at the New York Academy of Medicine. Theisen,⁶ concurring in the "herd" theory of Michel, Grunwald, Loewenberg, Hajek and others, said: ". . . I, of course, am fully aware that we can only explain a certain percentage of the cases this way. But I am convinced that a fairly large percentage of ozena cases are associated with disease of the accessory cavities." Theisen reported 60 cases and found sinus disease in 25 per cent without benefit of x-ray apparatus. With the present day aids to diagnosis he would probably have found 75 per cent of involvement instead of 25 per cent. All the patients with sinusitis on whom he operated were cured or greatly improved. The majority were children and young adults and many had a history of scarlet fever, measles or diphtheria, from which the beginning of the purulent discharge was dated.

In this symposium Robert E. Myles⁷ divided the clinical course of true ozena into three stages: (1) the mucopurulent stage of childhood; (2) the incrustation,

Bosworth's observations of the symptoms of the first stage had been corroborated by the clinical history of his own patients. He regarded every case of perennial suppurative rhinitis in children as a possible case of atrophic rhinitis. He commenced treatment by remov-



Fig 2 (mother of first patient)—All sinuses cloudy. Author treated her for deafness and sinus trouble before birth of patient 1. Sinuses drained July 29, 1938. The sinus disease followed measles at the age of 20.

ing whatever obstruction there might be to breathing and increasing nasal drainage in any other way that seemed expedient. He said: "Judging from my experience, I can state that proper operative treatment of the nasal accessory sinuses, in addition to the local treatment of the other stages, has given me the best results."

Clarence Rice,⁸ of New York, said:

I think it may be shown that we have what may be properly termed an acute atrophic rhinitis, and, secondly, a chronic atrophic rhinitis. . . . the acute form is the one occurring in children, or in young adults, preceded by a profuse purulent discharge from both nostrils, a purulent rhinitis and oftentimes brought about by some of the eruptive fevers, diphtheria or grippe. I have long felt that the purulent rhinitis of children, so ably described by Dr. Bosworth, was, in the majority of cases, if not in all, a sub-acute bilateral sinusitis.

For the time at which these observations were made I consider them extremely able. Two of the most important articles on ozena were written by James Adam,⁹ of Glasgow. In 1909 he reported 30 cases in which examination was made before the advent of the x-ray apparatus. He was convinced of the great importance of chronic sinusitis as an etiologic factor in ozena. The study of 141 additional cases reported in 1934 strengthened his conviction. He found sinusitis in 93, or 66 per cent. The disease began before puberty in 78 per cent and before the age of 7 in 42 per cent. He pointed out the difficulty (and it must be admitted) of making a diagnosis of sinusitis in children, especially of the ethmoid and sphenoid cells. He said that his percentage of 66 was low, because in 20 cases there was not a



Fig. 1 (case 1).—Appearance at the age of 21, showing all sinuses clear.

or ozena, stage, occurring between the ages of 4 and 16 and never afterward, and (3) the adolescent stage, from the age of 25 to the end of life. He said that

5. Kelly, A. B.: Chronic Nasal Discharge and Sinusitis in Children. *Lancet* 2:1132 (Nov. 28) 1925.

6. Theisen, C. F.: A Consideration of the "Herd" Theory as an Etiologic Factor in Ozena. *Laryngoscope* 18:417, 1908.

7. Myles, R. E.: The Treatment of Atrophic Rhinitis, Including Ozena. *Laryngoscope* 18:425, 1908.

8. Rice, C.: Atrophic Rhinitis and Ozena. *Laryngoscope* 18:435, 1908.

9. Adam, J.: The Pathology and Treatment of Atrophic Rhinitis. *Glasgow M. J.* 72:19, 1909; Atrophic Rhinitis. *J. Laryng. & Otol.* 10:375 (May) 1934.

fair opportunity for investigation. He traced 60 patients, of whom 9 were unimproved, 27 were improved and 24 were cured. He examined 15 patients from ten to thirty years afterward; 9 were cured and 6 were improved. Of 8 who had operations on the sinuses, 4 were cured and 4 improved. Two of those improved did not have all the sinuses operated on. Adam said that what struck him about the literature was the great attention paid to the last stage of the malady and the little given to the early clinical history. He quoted Leroux-Robert and Costiniu as saying in the Madrid report that atrophy, crusts and fetor are the characteristics of the disease and are its signature, and he made the pertinent observation that the signature is subscribed at the end of a long clinical document. Leroux-Robert and Costiniu are far from alone in their opinion, yet not one of these three components is the essence of the disease. With some distinct exceptions, atrophic rhinitis begins as suppurative rhinitis during or before school days. Adam made the point that the more thoroughly one examines one's patients with ozena the more often one finds sinusitis.

Adam, Hajek, St. Clair Thomson and others emphasized the point that infected adenoids may cause atrophic rhinitis. It is well known that the first thing to do for sinusitis in children is to remove infected adenoids and tonsils. The infected adenoids may block the natural drainage of the sinuses, and their removal may promote drainage to such an extent that the sinuses will clear up.

Of great importance in the study of ozena is the report on 80 cases by Gordon Hoople and A. W. Rowe,¹⁰ which, like all Hoople's studies, is thoroughly scientific. After exhaustive examination the authors are prepared to throw light on almost any controversial question

and fetor made their appearance together: no crusting, no fetor; no fetor, no crusting. There was an average interval of ten years between the appearance of crusting and fetor and the examination. Forty-nine patients, or 60 per cent, gave a history of a purulent discharge



Fig. 4 (case 4).—Examination by roentgenologist was pronounced negative, but inspection showed crusts, atrophy and fluid pus. The pus could be seen issuing from the region of the antral openings.

previous to the appearance of crusting and fetor. The authors expressed the belief that a much larger percentage than was deduced from the histories had had a previous purulent discharge and that there may be an important connection between the purulent discharge and the development of atrophic rhinitis. Though 75 per cent showed disease of the sinuses, only a few were referred for operation. In all the patients operated on great improvement was noted. The crusting and fetor were stopped, and the atrophic process was arrested. The authors expressed the opinion that recovery would in all probability have been hastened if more operative work had been done. Physicians interested in ozena should read this article.

In 1924 Mithoefer¹¹ gave the results of his operative experience in 6 cases in which he used the technic of Lautenschläger. He was highly successful, and he expressed the belief that purulent sinusitis is the cause of ozena.

Lorie and Lux,¹² who followed the technic of Halle in 18 cases, had gratifying results. They also expressed the belief that purulent sinusitis is the cause of ozena.

Here I should like briefly to epitomize the views of textbook authorities.

Reading Hajek's¹³ views engenders confusion:

Chronic empyema of the ethmoidal labyrinth is of frequent occurrence. It includes a great number of the previously described cases of disease, partly as recurring polypus formation, partly as fetid blennorrhoea (ozena). In the latter type the disease of the ethmoidal labyrinth alone or in addition to an affection of the accessory sinuses relatively frequently forms the essential substratum of the disease.

11. Mithoefer, W.: Modern Treatment of Ozena, *Ann. Otol., Rhin. & Laryng.* 33: 391 (June) 1924.

12. Lorie, A. J., and Lux, P.: Atrophic Rhinitis and Ozena: Halle Operation, *Ann. Otol., Rhin. & Laryng.* 33: 1263 (Dec.) 1924.

13. Hajek, M.: Pathology and Treatment of the Inflammatory Diseases of the Nasal Accessory Sinuses, ed. 5, St. Louis, C. V. Mosby Company, 1926, p. 444.

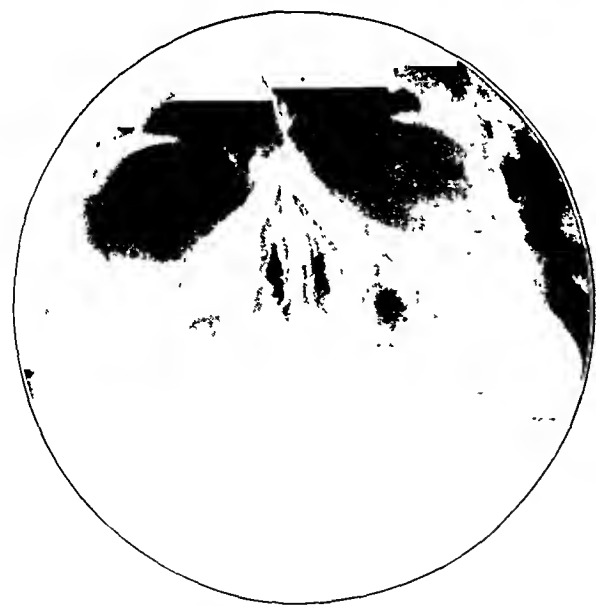


Fig. 3 (case 3).—Appearance at the age of 26, showing all sinuses clear except for slight cloudiness in right ethmoid.

relating to ozena. Every patient had a Wassermann test, a roentgen examination, an endocrine test and a determination of the basal metabolic rate. Sixty showed involvement of the sinuses. The age and sex incidence were those typical of ozena. In every patient crusting

10. Hoople, G. D., and Rowe, A. W.: Atrophic Rhinitis, *Ann. Otol., Rhin. & Laryng.* 36: 144 (March) 1927.

That would seem to be putting the role of suppurative sinus disease in the etiology of ozena about as strongly as it could be put. In a chapter on ozena as associated with suppurative sinus disease he reported in detail 12 cases from his first book, saying that he was able to add 18 similar ones. After surgical drainage the crusting and odor disappeared and the atrophic condition was entirely relieved in most cases and was much improved in the others. He said that the secretion never comes from the atrophic membrane but comes from a circumscribed area. He argued against the reports of the early pathologists, Hartmann, Krause, Fränkel, Zuckerkandl and Harke, which denied the association of purulent sinusitis with ozena. He cited with approval the criticism of Grünwald that the investigation did not generally include all the accessory sinuses, especially the ethmoid labyrinth. He added the objection that the anatomists were not always able to determine the origin of the secretion because the secreting membrane does



Fig. 5.—Typical atrophic rhinitis in a woman aged 50, who had had crusting and odor since she could remember. Crusting and odor ceased after bilateral drainage of antrums.

not always show macroscopic changes. After forcefully stating the case for suppurative sinusitis as a cause of ozena, he apparently resented being classed as a believer in sinusitis as an etiologic factor.

Sir St. Clair Thomson² stated that "the cause of ozena will most often be found in a suppurating sinus" and that ozena in the wide nostril associated with a deflected septum will nearly always be found to depend on a suppurating sinus.

A. Logan Turner¹⁴ said:

It is now generally admitted that ozena is the terminal stage of chronic purulent rhinitis. This may arise as the result of infection of the nasal mucosa with the gonococcus, but is more commonly the sequela of measles or scarlet fever.

He reported a series of cases investigated in Edinburgh, in almost all of which the patient had had measles in childhood. He declared that a similar history is found in most cases in which there is a purulent discharge from the nose, that any paranasal sinus may be

affected but that the condition is probably confined to the ethmoid air cells.

Phillips¹⁵ quoted Lewis A. Coffin, who in 1911 presented a series of x-ray pictures of diseased sinuses in children and said that the condition shown, unless spontaneously improving, was the forerunner of atrophic rhinitis. He reported many cases in which he had cleared up the odor entirely by opening, ventilating and washing the antrum through the inferior meatus.

Ballenger¹⁶ stated that no theories as to the cause of ozena had been definitely proved, although the one advocated by Grünwald recently and by Vienssens and Reininger at the end of the seventeenth century had rapidly grown in popularity. He said:

Those who hold to this theory believe that all or nearly all cases of atrophic rhinitis are due to suppuration of the accessory sinuses of the nose, more especially the ethmoidal and sphenoidal. My own experience is in accord with this view. I have seen many cases cured or greatly relieved by attention to the accessory sinuses. . . . In conjunction with Dr. Joseph C. Beck I have had skiagraphs of the sinuses made in cases of atrophic rhinitis, and without exception the sinuses appear cloudy, as they do in sinusitis, i. e., their outline is poorly defined and the area of the cavities is opaque. This shows that in atrophic rhinitis the sinuses are often diseased, though it does not prove the disease of the sinus to be primary.

This, so far as I know, is the first observation supported by x-ray evidence.

Barnhill¹⁷ said:

In some instances it seems to be a late result of simple hyaline plastic rhinitis (purulent rhinitis of childhood). In others the association of the disease with persistent suppuration of one or more nasal accessory sinuses leads to the belief that nasal sinus disease is a cause.

Jackson and Coates¹⁸ and Imperatori and Burman¹⁹ did not mention sinus suppuration as a possible cause, though in the textbook of Jackson and Coates, Lewis A. Coffin and Harmon Smith gave strong support to this theory.

Lederer²⁰ said "Wide acceptance is given to the theory that the disease is the terminal stage of hypertrophic rhinitis." This is in effect the theory of Bosworth, namely that the cause of ozena is the purulent rhinitis of childhood. Lederer said also:

Many clinicians maintain that the disease is always secondary to a purulent rhinitis in childhood, and that frequent attacks lead to it. This is especially true for the sequelae of the acute exanthemata. The theory has been advanced that diseases of the accessory sinuses are the primary cause. . . . On the other hand, many instances of accessory sinus suppuration have been observed with the nasal mucous membrane bathed in pus for a long time, with no evidence of atrophic rhinitis. When the two conditions coexist, the accessory sinus involvement may be either primary or secondary.

The views of some of the rhinologists on the Continent²¹ follow:

Terracol, of Montpellier, expressed the belief that ozena is due to an infection of the accessory cavities;

15. Phillips, W. C.: *Diseases of the Ear, Nose and Throat*, ed. 7, Philadelphia, F. A. Davis Company, 1928.

16. Ballenger, W. L.: *Diseases of the Nose, Throat and Ear*, Philadelphia, Lea & Febiger, 1908.

17. Barnhill, J. F.: *The Nose, Throat and Ear*, New York, D. Appleton & Company, 1928, p. 80.

18. Jackson, C. and Coates, G. M.: *The Nose, Throat and Ear and Their Diseases*, Philadelphia, W. B. Saunders Company, 1929.

19. Imperatori, C. J. and Burman, H. J.: *Diseases of the Nose and Throat*, Philadelphia, J. B. Lippincott Company, 1939.

20. Lederer, F. I.: *Diseases of the Ear, Nose and Throat*, Philadelphia, F. A. Davis Company, 1938.

21. References to these authors may be found in the review by Ierax-Robert and Costinuu.

14. Turner, A. L.: *Diseases of the Nose, Throat and Ear*, ed. 2, Baltimore, William Wood & Company, 1927.

Moure, of Bordeaux, that it is most often caused by suppuration in the maxillary sinus, with suppuration in the sphenoid sinus as the next most frequent cause; Brindel, of Bordeaux, that it is the result of a local infection in the nose and sinuses, a previous purulent rhinitis, and is not the cause of sinusitis; Jacques, of Nancy, that it is a form of ethmoiditis; Mounier, of Paris, that it is an atrophy of the mucous membrane following syphilis, grip, scarlet fever, measles, diphtheria and other diseases.

The most important work on the Continent has been done by Lautenschläger²² and Halle,²³ of Berlin. The work of both is based on their conviction that purulent sinusitis is the cause of ozena. They have expressed the opinion that ozena begins as purulent sinusitis in childhood. Lautenschläger reported operations in 400 cases of ozena, in all of which there was chronic purulent sinusitis. His technic was a radical operation on the antrums followed by displacement of the nasoastral wall toward the septum, bringing about adhesion between the nasoastral wall and the septum. The mucous membrane of the antrums was radically removed. The results were spoken of as brilliant. Halle performed a similar but less radical operation in more than 500 cases. His operation, too, was based on the thesis that purulent sinusitis is the cause of ozena. His results likewise were classed as brilliant.

REPORT OF CASES

CASE 1.—E. H., a boy aged 18 months, was brought to me on April 26, 1916 with a profuse purulent discharge from his left nostril. At the time I saw him a unilateral purulent discharge generally was taken to mean that a foreign body was in the nose. The child was given a general anesthetic, and the nostril was thoroughly searched for a foreign body. None was found. At the age of 9 years the child was brought back. His parents stated that the discharge had continued from the left side and later had appeared on the right side.

The child was most pathetic. The nostrils were filled with greenish crusts with a foul odor. The crusts could be seen in the pharynx. There was a stream of green pus running down the throat. The child was undersized and undernourished and had a sickly greenish color. The parents stated that only by the greatest effort could they induce him to take food. On transillumination both antrums were dark. A roentgenogram made by Dr. H. S. Shoulders showed both antrums densely clouded. Because of his age an intranasal operation was done on both antrums. As large an opening as possible was made under the inferior turbinate bone. Irrigation through the openings was carried out for a long period. As the discharge gradually lessened, the boy's health and appetite rapidly improved. The discharge entirely ceased, and I did not see the patient until April 13, 1936, when he came for a check-up.

He had developed into a fine physical specimen with no sign of sinus trouble. The openings were still patent under the inferior turbinate bones, and irrigation was carried out through them. The fluid returned perfectly clear, and a roentgenogram by Dr. Shoulders showed all sinuses clear. The patient had become an aviator some years before and had undergone a rigid physical examination every six months. The board had seen no evidence of sinus trouble. He is now a flying instructor in the army.

CASE 2.—J. W., a boy aged 10 years, seen on Dec. 5, 1925, had had a severe attack of influenza at the age of 3 years, during the epidemic of 1918. Since that time there had been a great deal of nasal discharge. His mother said that he never used less than twenty handkerchiefs a day. He was undernourished, had no appetite and was thin, and his color was a pasty green. An inspection of his nose showed both nostrils

filled with crusts and a purulent discharge. There was a foul odor. On transillumination both antrums were dark. A roentgenogram by Dr. Shoulders confirmed the diagnosis. He reported that both antrums and the ethmoid sinuses were cloudy. Because of the patient's age an intranasal operation was done on both antrums; it was performed at St. Thomas Hospital Dec. 12, 1925. After the operation there was a profuse discharge of pus from both antrums. They were irrigated through the operative openings at intervals for six months, when the discharge ceased. It did not recur. I did not see the patient again till January 1941, when I wrote him to come for a check-up for purposes of this report. He was a splendid physical specimen; he had been passed by the aviation board for service. There was no indication of sinus trouble and no discharge or crusting in the nose, and the openings under the inferior turbinate bones were still patent. I washed out the antrums through these openings, and the solution returned perfectly clear from both sides. A roentgenogram showed slight cloudiness in the right ethmoid labyrinth. There was no atrophy of the mucous membrane.



Fig. 6.—Appearance in a case of typical atrophic rhinitis. All sinuses cloudy. Crusting and odor relieved after drainage of both antrums. Irrigations still necessary because of purulent ethmoiditis and frontal sinusitis. Operation is refused.

CASE 3.—C. C., a girl aged 17, consulted me on Nov. 25, 1921. She reported that since early childhood she had had severe "catarrh," which was characterized by greenish crusts with a foul odor. Her father was a circuit rider, whose occupation necessitated frequent change of residence. She had undergone treatment from many physicians. She was thoroughly discouraged and greatly depressed over the condition, which rendered her repulsive to society. Inspection revealed that the nostrils were short and wide. There were greenish adherent crusts with a foul odor. Removal disclosed atrophy of the membrane and reduction in size of the inferior turbinate bones. Transillumination showed both antrums dark. A roentgenogram made by Dr. Shoulders showed both antrums and the ethmoid cells on both sides to be cloudy. An intranasal operation was done, large openings being made under the inferior turbinate bones. A long period of irrigation followed. The purulent discharge from the antrums, at first copious, gradually decreased and finally ceased. With cessation of the discharge crusting and odor ceased. The girl's health was restored, and she became cheerful and again took her place in society. I have not seen her for nineteen years, but her family reports her absolutely cured. She is now happily married.

CASE 4.—B. B., a girl aged 13, consulted me Jan. 22, 1931. She had had influenza during the 1918 epidemic, when she was

22. Lautenschläger: Madrid report; also quoted from Mithoefer, W. Ann. Otol., Rhin. & Laryng. 33: 391 (June) 1924.

23. Halle, quoted from Lorie, A. J., and Lux, P.: Ann. Otol., Rhin. & Laryng. 33: 1263 (Dec.) 1924.

a few months old, almost losing her life. Since then she had had a profuse purulent discharge from both nostrils, characterized by crusts and odor. Inspection showed the nostrils to be wide and short and the mucous membrane to be covered with greenish crusts with a foul odor. Removal of the crusts disclosed that the membrane was atrophic, with the inferior turbinate bones greatly reduced in size. The girl was partially deaf, hearing a loud voice with the left ear and the ticking of a watch on contact with the right. The antrums looked cloudy under transillumination. A roentgenogram of the sinuses was made by Dr. Shoulders, who reported that all the sinuses were normal. As fluid pus could be seen issuing from the natural openings, drainage of the antrums was advised. In many cases of frank purulent sinusitis the roentgenographic report is negative. A large opening was made under each inferior turbinate bone, and the antrums were washed out through the openings. The drainage from the antrums was profuse, and treatment was carried out for a long time before it stopped. With the cessation of drainage, crusting and odor ceased. The rehabilitation of the child was remarkable. Whereas she had been morose, irritable and solitary, she sought



Fig. 7.—Typical atrophic rhinitis, crusting and odor existing since patient, a man aged 74, could remember. Crusting and odor ceased after bilateral antral drainage.

companionship and friends and developed into a remarkably striking and handsome young woman with many suitors. She is now happily married.

I have reported these 4 cases because the ozena started in 2 in infancy and in 2 at the age of 3 years. After a period of purulent rhinitis of childhood crusting, odor and atrophy developed in all, and in all there was severe suppurative sinusitis. In 1 scarlet fever occurred at the age of 2 years, in 1 influenza at 3 months and in 1 influenza at 3 years. I have 4 interesting adult patients, 1 aged 74, who had had crusting and odor as long as they could remember. They all showed atrophy and roony nostrils. All had severe purulent sinusitis. After drainage, crusting and odor ceased. The atrophied membrane became pink, and the health greatly improved. These patients are interesting to me because I have been able to follow them for years and note their recovery.

CONCLUSIONS

The conclusions herein set forth are the result of a lifetime of observation of patients with ozena, together with a careful study and analysis of the observations and conclusions of the many rhinologists who have made

a careful study of the disease. I believe that ozena is the end result of a chronic purulent focus. This focus may be in the nasal cavity, the accessory sinuses or the postnasal space. This is the conviction expressed by Grünwald. To a large extent it is the conviction of Michel, who was the real pioneer in the theory of a chronic purulent focus. He confined the focus to the accessory sinuses. Loewenberg was the stoutest defender of the sinusitis theory.

The bedrock of my conviction is the brilliant observation of Bosworth that there is a purulent rhinitis of early childhood which results in ozena in from five to ten years. Bosworth had an enormous clinical experience and apparently followed his patients through the stage of purulent rhinitis to the point at which the condition developed into atrophic rhinitis. The purulent rhinitis of childhood theory has the support of a large number of physicians who have confirmed it in their experience. There is almost unanimous agreement among rhinologists who keep careful histories that the beginning of discharge dates from an attack of an exanthem, diphtheria or epidemic influenza. The next step in logical sequence is to connect the purulent discharge with purulent sinusitis resulting from this attack. An indication in this direction is the connection between purulent otitis media and scarlet fever, measles, diphtheria and epidemic influenza. In practically every case complicated by suppuration of the middle ear a roentgenogram disclosed purulent sinusitis. The most brilliant work in confirmation of this condition was done by Gordon Hoople and his associates in a painstaking study of 384 cases of scarlet fever in children. Clinical, pediatric and roentgen examination disclosed that 91 per cent of the children had sinus involvement. This correlation has been confirmed by many other investigators, notably the late Dr. Manges, professor of roentgenology at Jefferson Medical College. I called his attention to the connection in 1924. Thereafter he roentgenographed the sinuses of every patient with mastoiditis brought to him for a roentgenogram of the mastoid. In no case did he fail to find purulent sinusitis. I think that physicians are now practically agreed that purulent otitis media following scarlet fever, measles, diphtheria and epidemic influenza is due to purulent sinusitis and that the purulent sinusitis is secondary to these diseases. I think that the clinical picture of the origin of purulent sinusitis in childhood, the progress of the sinusitis and the stage at which it becomes atrophic rhinitis is clear.

A stumbling block to many authorities is the fact that ozena appears five times as often among females as among males. There are, of course, as many cases of purulent sinusitis in boys as in girls. If the purulent sinusitis is the cause, why are there not as many cases of ozena in males as in females? This is something about which one must theorize. My theory depends on the difference in habits of boys and girls. Boys are outdoor animals. They love fresh air and outdoor games that call for violent exercise and cause elevation of the blood pressure. The turbinal venous sinuses are filled with blood in a physiologic response to the increased temperature and the exercise and a ravenous appetite is created. On the other hand, the girls of former generations lived an indoor life. They liked to play with dolls and did nothing to raise their blood pressure. They lived in too dry an atmosphere, and their lack of fresh air and exercise reacted on their appetites so that they did not get the proper amount of nourishing food. All these things would make them

a prey to the deficiency diseases which some physicians think are at the root of atrophic rhinitis. There are perhaps more turned up noses among girls than among boys. The turned up nose admits too much air and causes a drying of the purulent secretion into crusts. The drying makes the expulsion of the crusts more difficult and favors a perfect culture medium for the implantation of the coccobacilli and all the other bacilli found in the secretions of patients with ozena. It seems to be the implantation of these bacilli which gives rise to the characteristic crusting and odor of the disease. It is likewise probable that it is the implantation of the bacilli which brings about the atrophy of the membrane. But when the source of the purulent secretion is cut off, odor and crusting cease.

The incidence of ozena has greatly decreased. There may be several factors at work. First, the population is receiving much more intelligent treatment of disorders of the nose and throat. Diseased tonsils and adenoids are being removed, and purulent sinusitis is being attended to. Second, much more intelligence is being shown in feeding children, which lessens the incidence of deficiency diseases. Third, children lead a much more athletic, open air life than they did formerly. This applies especially to girls.

When I was on the house staff of the Manhattan Eye and Ear Hospital, from 1896 to 1899, half of the work in the nose, throat and ear clinic consisted of removing the foul crusts from the noses of patients with atrophic rhinitis. Where are such patients now? A falling off is noted in private practice also.

I should like to say a final word to rhinologists who do not believe that a purulent focus is the cause of atrophic rhinitis. When one takes into account the enormous number of patients who have been freed from their disgusting affliction by surgical drainage, why should not every patient with atrophic rhinitis be given the benefit of a careful search for such a focus? The fact that a purulent focus cannot always be found does not mean that such a focus is never the cause. Every patient should be given the benefit of a most painstaking investigation in an effort to locate the cause of the disease. My firm conviction is that ozena is a disease of children just as much as scarlet fever, measles, diphtheria and the exanthems and is inextricably bound up with them. When one can dispose of the purulent focus one can dispose of the crusts and fetor and let the unfortunate victim of ozena resume his place in society.

ABSTRACT OF DISCUSSION

DR. JOSEPH C. BECK, Chicago: The paper of Dr. Cullom is a masterpiece on the history of this disease. Dr. Cullom inquires "Why is it that we do not see more atrophic rhinitis?" He should have followed with the answer by saying "We now have real pediatricians and pathologists who have investigated further than our masters." A recent paper presented before this section by Ruskin of New York showed by means of histopathologic pictures the changes found in genuine ozena and also prognosticated from the vascular basis why this atrophic rhinitis takes place in some persons and not in others, but his studies did not advance the therapy of the condition. Dr. Cullom says in a note to me "Let's stop pussyfooting and call this disease a secondary sinus condition." I believe sinus disease has a great deal to do with it, yet the last word has not been spoken on what was known to the old masters as genuine ozena. Dr. Cullom asks in his paper "Why does this occur more frequently in females?" I am sure you all have seen these facial expressions in the genuine ozena cases from childhood on. There is no doubt something else underlying the cause besides just sinus disease. My contribution to the

subject many years ago referred to by Dr. Cullom was that the sinuses were involved, but I didn't say that the cause was in the sinus. Today if you have ozena cases or atrophic rhinitis cases, your best bet is to attack the sinuses not radically surgically but with local treatment to the sinuses. It is practically the antrum alone that is involved. The other sinuses are but little involved. Shea, Carmody and many others have contributed papers on the effect of sinus disease not permitting the free aeration and development of the sinuses. Children with sinus disease show roentgenologically that they do not become pneumatosized as well as those that do not have infected sinuses.

DR. J. MILTON ROBB, Detroit: Dr. Cullom has given a detailed report of the literature as well as of a broad experience in his own practice regarding ozena. We see fewer cases of this disease both in private practice and in clinics. This is apparently true in all sections of the country and for the reasons stated by the author. It is my opinion that chronic atrophic catarrh and ozena are similar but of varying intensity. The probable sequence of events is a focus of infection in the nasal cavity, postnasal space, but chiefly in the accessory sinuses in childhood, followed, at varying periods, by a purulent rhinitis and ozena. The speed with which the condition develops, as well as its intensity, will depend on neglect of the preventive measures. Persons who develop ozena have a definite constitutional tendency to atrophic change. Atrophic rhinitis is found five times more frequently in women than in men and seems to run in families. This points to some imbalance in the endocrine makeup, which has been observed clinically and experimentally by Mortimer, Wright, Collip and others, namely that structural abnormalities about the pituitary are frequently associated with ozena. It is known also that the nasal mucous membrane undergoes cyclic change with the menstrual phenomenon which is dependent on the follicular hormone of the ovary and has long been associated with the other "sex skins" of the body. The ovary in turn is governed by the secretions of the anterior pituitary. Chronic rhinitis, then, in persons whose developmental or reparative mechanism is inadequate because of hormonal imbalance predisposes to mucosal atrophy and ozena.

DR. FLETCHER D. WOODWARD, Charlottesville, Va.: It has been recognized that sinusitis frequently follows diseases of childhood such as measles, scarlet fever and influenza, but since pediatricians and otolaryngologists now treat these cases at the time they occur, we do not see many cases of atrophic rhinitis. If these cases are neglected, a persistent sinusitis is apt to occur, which leads to ozena and arrests the growth and development of the sinuses. This may account for the short nose with the wide nares so often associated with ozena. The amount of atrophy noted in each case varies from a small area just within the vestibule to that of complete atrophy of the nasal mucosa. Many of these patients become secondarily infected with various bacilli, and then there develops ozena, which is an end result of a neglected case of childhood sinusitis. There is no reason why we should not apply old and accepted surgical procedures when infection is present in the sinuses. Dr. Coffin many years ago emphasized the relationship of atrophic rhinitis to sinus infection. Why it occurs more frequently in the female than in the male has not been explained. Dr. Andrew Eggston of New York has suggested that there is an estrogenic hormone secreted from the erectile tissue in the nose. If this is true and we have atrophy of the erectile tissue, then the application of an estrogenic hormone intranasally should be of benefit, and I feel that clinical experience verifies this assumption. The condition is largely due to neglected sinus infections. Therefore our treatment should be primarily directed at the elimination of the infection, plus the usual methods of cleansing the nose of the retained crusts and the application of an estrogenic hormone in oil to the nasal mucosa.

DR. WILLIAM S. VAN FOSSEN, Columbus, Ohio: I agree that there has been some unknown factor back of ozena which has made real progress in treatment impossible. From my experience with a limited number of cases, this factor seems

to be vitamin A deficiency. Four years ago I treated a 14 year old girl for extreme ozena. The case responded to treatment with vitamin A so well that it still appears after four years to be completely cured. Other cases under treatment have responded satisfactorily also. The method of supplying vitamin A is vitally important. I have secured no benefit from oral administration, but patients have responded in an astonishingly short time to local nasal application. I use vitamin A in (carotene A) oil and, after the nasal mucosa has been freed from crusts and mucus, completely cover it with a fine, nebulizing spray. It is also essential that treatment be given daily. There is a rapid regeneration of the epithelium, followed by a reconstruction of the submucosa. All patients under 28 years of age have had a return of the sense of smell.

DR. G. M. KOEPECKE, Minneapolis: I believe that atrophic rhinitis ozena is a local manifestation of a more general condition. The general condition is characterized by fatigue, low blood pressure, low basal rate, dry skin, dropping and dripping in the back part of the throat in early cases, and then true ozena in later cases. This I have attributed to a hypoadenia. Most of these patients have been subjected to a disease, either scarlet fever or diphtheria, or have been under a tremendous strain which has been a drain on the adrenal glands. These cases of atrophic rhinitis seem to be benefited to a great extent by the administration of adrenal medication, given by mouth as a whole desiccated gland, even though many of the laboratory technicians say that the adrenal gland will not be absorbed by the stomach. However, I have found that these cases of odor, of crusting, will disappear in approximately three weeks, and that the patients symptomatically have been greatly relieved.

DR. M. M. CULLOM, Nashville, Tenn.: I was interested in what was said about the pediatricians. They are our main reliance. The realization that scarlet fever, measles, diphtheria and epidemic influenza often leave little patients with a chronic sinusitis, and are at the bottom of a lot of their troubles, will be a great help. I was recently asked to write an editorial for the *Philadelphia Medical World*. I took for my subject "The Sinus Question." I pointed out that one of the penalties we pay for walking in the upright position is sinus disease, because it places the drainage system at the top and makes the sinuses cesspools of disease and infection. Through them we have acquired scarlet fever, measles, diphtheria and epidemic influenza. It is of the utmost importance to understand the complications and infections that follow in the train of these children's diseases. Dr. Van Fossen spoke on treatment, but the paper is on etiology. He spoke of the nose being opened up and great harm being done. The nose should not be touched at all surgically unless there is absolute indication for operation, based on x-ray and other clinical evidence of suppuration in the sinuses. You all know how difficult it is to arrive at a diagnosis in a child with ethmoiditis or sphenoiditis or even pus in the antrum. I felt that this very difficulty would account for a great many of these cases which have been declared to be free of sinus disease. The enormous number of patients who have been benefited by operation should cause us to give every patient with this disgusting disease the most careful examination, if thereby we can arrive at the cause of his trouble. A single suppurating posterior ethmoid cell or a hidden purulent sphenoid may be causing the ozena. Because we can't say positively that every case of ozena is caused by a purulent sinusitis, let us not say that no case is caused by it.

Newton's Prism Experiment.—In 1666 Isaac Newton (1642 to 1727) performed the remarkable yet simple experiment which opened the story of modern light therapy. He placed a triangular prism in a beam of sunlight, thus splitting the shaft of light into a rainbow of spectral colors. It was shown for the first time, in this manner, that white light could be broken up into its variously colored components.—Krusen, Frank H.: *Physical Medicine*, Philadelphia, W. B. Saunders Company, 1941.

CHRONIC APPENDICITIS

RESULTS AFTER APPENDECTOMY FOR RECURRENT PAIN IN RIGHT LOWER QUADRANT OF THE ABDOMEN

RICHARD WARREN, M.D.

AND

H. THOMAS BALLANTINE JR., M.D.

BOSTON

"Chronic appendicitis" is a term which has been loosely used. It is the common observation of pathologists and surgeons that such a condition seldom exists as an entity exhibiting the usual pathologic characteristics of chronic inflammation. Most surgeons, realizing this, still operate on many patients with that diagnosis or essentially similar diagnoses (interval and recurrent appendicitis) who present a history of recurrent pain in the right lower quadrant of the abdomen. In cases of this recurrent pain prolonged clinical observation and study have usually excluded all sources of pain other than the appendix. The common assumption is that patients with this condition have intermittent attacks of acute appendicitis and that subsequent attacks are prevented by appendectomy. It has been our experience, however, that, although this is true of a small number of patients (7 of 112 in our series), the great majority have attacks which are in no way suggestive

TABLE 1.—Results in 138 Cases of Removal of Normal Appendix for Abdominal Pain

	Cured	Improved	Unimproved	Worse
Number.....	77	26	34	1
Percentage.....	56	18.8	24.6	0.7

of acute appendicitis. They are usually of short duration and seldom are incapacitating. Often, furthermore, the operation is performed during an attack and a normal appendix is found.

A certain number of such cases are nevertheless improved or cured by operation. Attempts have been made by careful microscopic restudy of such appendixes¹ to find some minor pathologic changes to account for the improvement. Such attempts have led to the use of various terms to describe the different types of appendix encountered (chronic lymphoid appendicitis, scarring of the appendix, lymphoid hyperplasia and others). None of these reports has given convincing evidence, however, that the incidence of such "pathologic" processes is greater in appendixes removed for chronic appendicitis than it is in the appendixes of the population as a whole. Shelley² found definite inflammatory changes in 63 per cent of appendixes removed incidentally at an operation for some other condition, and in 71 per cent of appendixes removed for chronic appendicitis, a surprisingly close correlation. Aschoff³ found chronic inflammatory changes in 75 to 80 per cent of appendixes examined at routine autopsy.

At the Massachusetts General Hospital most appendixes that are not acutely or subacutely inflamed are

From the Surgical Services of the Massachusetts General Hospital.

1. Fausset, C. B.: Correlation of Pathologic and Clinical Observations in Chronic Lymphoid Appendicitis, *Arch. Surg.* 39: 577 (Oct.) 1939. Cherney,² Aschoff,³ Shelley.⁴
2. Shelley, H. J.: Incidence of Asymptomatic Pathologic Conditions of the Appendix, *Arch. Surg.* 35: 621 (Oct.) 1937.
3. Aschoff, Ludwig: Ueber chronische Appendicitis, *Med. Klinik* 24: 1669 (Oct. 26) 1928.

divided into two classes, those in which no pathologic condition can be found and those in which there is some slight evidence of inflammation, usually infiltration of eosinophilic leukocytes or lymphocytes into the muscular layer.⁴ In 100 incidental appendectomies the proportion of the former to the latter was 82 to 18. In 422 cases in which appendectomy was done for symptoms presumably arising from the organ and in which the appendix was not acutely inflamed, the proportion was 77 to 23. This suggests that pathologic changes of such mild degree are insignificant and that for present purposes all such appendixes may be considered as normal.

One of the most constant sources of confusion as to what is meant by chronic appendicitis is the fact that at certain periods and in certain communities there has been a fashion for removing appendixes from patients with nervous indigestion, irritable colon and pylorospasm and even for such a definite pathologic entity as duodenal ulcer. These conditions have been thought to be initiated or perpetuated by "chronic appendicitis" which gave no other clinical signs or symptoms. The poor results of such operations have been emphasized repeatedly in the past and more recently by Alvarez.⁵ Our experience with these indications for appendectomy has been only with regard to patients who have been so operated on elsewhere and have come to us still suffering from their original complaints. We consider that removal of normal appendixes for these complaints is completely unjustifiable and cannot be too strongly condemned.

Although the policy at the Massachusetts General Hospital is to be conservative about indications for operation on patients with chronic or recurrent pain in the right lower quadrant of the abdomen in whom pathologic conditions outside the appendix are ruled out, a number of uninfamed appendixes are removed from such patients each year.

In the five year period of this study 618 uninfamed appendixes were removed from patients operated on primarily for appendicitis. In these patients no pathologic condition outside the appendix was found and no procedure other than appendectomy performed. Three hundred and eighty-three of the operations were emergency procedures done with a preoperative diagnosis of acute appendicitis. The remaining 235 patients were operated on with the preoperative conviction that the appendix was not inflamed. These 235 do not include 25 patients previously treated for appendicitis with abscess who returned for a true interval appendectomy and are classified in the group with inflamed appendixes. Since the total number of inflamed appendixes (1,440 acute, 85 subacute and 25 interval) removed during the same period was 1,550, only 10.7 per cent of our operations were done for chronic appendicitis. More than half, or 124, of the 235 patients had roentgen studies made before operation, and 44 of these had two or more sets of studies done. These were undertaken with a view to excluding other causes of pain but in other respects were of no help in pointing toward the appendix as the offending organ.

4. Drs. L. A. Gall and M. DeG. Ruffin of the Department of Pathology gave assistance in reviewing microscopic sections in cases of borderline appendicitis.

5. Alvarez, W. C.: When Should One Operate for "Chronic Appendicitis"? Study of Three Hundred and Eighty Five Cases, *J. A. M. A.* 114: 1301 (April 6) 1940.

REVIEW OF THE LITERATURE

The largest series of follow-up cases that we have found in the literature is that of Shelley.⁶ He reported a percentage of cures averaging 87 in 704 cases. The highest percentage of cures occurred in cases in which there was spasm of the abdominal musculature over the appendical region on examination just prior to operation. This suggests that in some of the cases there may have been more acute inflammation in the appendix than the nomenclature used would indicate. Even among the cases in which there was tenderness elsewhere than in the right lower quadrant of the abdomen the percentage of cures was 50 to 70. Other authors who have reported smaller series with favorable results

TABLE 2.—Classification of One Hundred and Thirty-Eight Cases of Removal of Normal Appendix According to Clinical Diagnosis

	Cases	Condition of Patient			
		Cured	Im proved	Unim proved	Worse
Chronic appendicitis *					
Diagnosed preoperatively ..	62	32	14	16	0
		51 7%	22 6%	25 8%	
Diagnosed postoperatively .	61	32	15	14	0
		52 4%	24 0%	23 0%	
Acute appendicitis					
Diagnosed preoperatively...	40	27	4	8	1
		67 5%	10 0%	20 0%	2 5%
Diagnosed postoperatively †	22	11	2	8	1
		50 0%	0 1%	36 4%	4 5%
Subacute and subsiding appendicitis					
Diagnosed preoperatively...	20	12	3	5	0
		60 0%	15 0%	25 0%	
Diagnosed postoperatively ‡	22	14	4	4	0
		63 6%	18 2%	18 2%	
Mesenteric adenitis					
Diagnosed preoperatively...	6	4	1	1	0
		66 6%	16 6%	16 6%	
Diagnosed postoperatively †	14	6	3	6	0
		42 9%	21 4%	35 8%	
Miscellaneous †					
Diagnosed preoperatively ..	10	3	4	3	0
		30 0%	40 0%	30 0%	
Diagnosed postoperatively ‡	10	14	2	3	0
		73 0%	10 5%	15 7%	

* Includes such equivalent diagnoses as healed appendix, healing appendix and interval appendicitis.

† Includes such diagnoses as ruptured corpus haemorrhagium, ovarian cyst and cases in which no diagnosis was made.

‡ Review of the records in these cases reveals that the postoperative diagnoses were not completely justified by the conditions. These cases were accordingly not excluded.

are Davis,⁷ 420 cases with 76 per cent excellent and satisfactory results and 24 per cent unsatisfactory; Block,⁸ 81 cases with 87 per cent complete relief or partial cure and 13 per cent unsatisfactory results, and Saltzstein,⁹ 50 cases with 74 per cent relief.

Others have reported unfavorable results. Kraemer¹⁰ had 78 patients of whom only 12 said they had been cured. Alvarez⁵ found only 2 cured among 255 patients.

In the great majority of cases which these last two authors reported, no attacks of abdominal pain were

6. Shelley, H. J. Chronic Appendicitis. Is It a Clinical Entity? *Arch. Surg.* 37: 17 (July) 1938.

7. Davis, W. T. Statistical Report of End Results in Six Hundred and Seventy Seven Cases of Chronic Appendicitis, *Bull. Moses Taylor Hosp., Scranton, Pa.* 1: 18 (May) 1927.

8. Block, F. B. Chronic Appendicitis. A Study of End Results, *M. J. & Rec.* 134: 448 (Nov. 4) 1931.

9. Saltzstein, H. C. Chronic Appendicitis, *Ann. Int. Med.* 6: 278 (Aug.) 1932.

10. Kraemer, M. Chronic Appendicitis. Appendectomy in Absence of History of Acute Appendicitis or of Appendiceal Colic, *Am. J. Surg.* 42: 398 (Nov.) 1938.

recorded. Their evidence is important in discouraging operation for "chronic appendicitis" in all cases in which attacks of pain in the right lower quadrant of the abdomen are not present but gives little help in cases in which it is present.

TABLE 3.—Results in Sixty-Nine Cases of Removal of Normal Appendix with Pain in the Right Lower Quadrant of the Abdomen, Symptoms of More Than One Month's Duration and Three or More Attacks

	Cured	Improved	Unimproved	Worse
Number.....	40	15	13	1
Percentage.....	58	21.7	18.8	1.4

MATERIAL AND METHODS OF STUDY

All patients who were operated on at the Massachusetts General Hospital in the five year period from March 1934 to March 1939 and from whom uninfamed appendixes were removed were considered. Only those in whom no pathologic condition outside the appendix was found and on whom no procedure other than appendectomy was performed were selected for study. In addition, the patients who underwent incidental appendectomy at operation for some other purpose and those having an elective appendectomy following the subsidence of an appendical abscess were excluded. To each patient a letter was written requesting a follow-up interview. A history was taken and an examination of the abdomen performed on those who came in answer to the letter. Among 618 eligible patients adequate follow-up studies were procured on 138. No follow-up study was made earlier than nine months after operation. On the basis of the interview an impression was recorded as to whether the patient had been cured, improved, unimproved or made worse after the operation. The patient's statement as to the result agreed in most instances with the examiner's impression as derived from the interview. In 16 cases, however, the examiner's opinion differed from that of the patient, and because the examiner had the more objective point of view his impression was taken as final. In 4 cases the examiner's impression was more favorable than the patient's and in 12 of them less favorable.

These 138 patients were divided into classes according to their symptoms and the motives behind operation. The mortality, the postoperative morbidity and the late results were analyzed.

MORTALITY

In this series of 613 cases there was no postoperative death. No series of major operations can be prolonged indefinitely, however, without a death from some unpredictable complication. We are not justified on the basis of this study in saying that the operation carries no hazard whatever, since others have reported mortalities ranging from 0 to 2.8 per cent.¹¹ The mortality, then, although low, is not negligible.

MORBIDITY

Of our 138 cases complications occurred in 18. There were 4 cases of persistent postoperative fever of unknown cause, 8 cases of hematoma or infection of

the wound (4 minor, 3 major and 1 not stated), 2 cases of late intestinal obstruction nine months and three years postoperatively, 3 cases of acute pharyngitis or tonsillitis and 1 case of postoperative pulmonary atelectasis. In 4 cases the follow-up interview alone revealed the complication, of which there had been no evidence before the patient's discharge. This demonstrates that statistics on complications in patients whose postoperative stay in the hospital averages about eight days are valueless without a follow-up interview. An attempt was made to estimate the morbidity from the operation by questioning the patients as to the time it took them to regain their strength after discharge from the hospital. Among the 101 patients who were able to answer this question 3 said that their strength was normal immediately on returning home, 4 said that they had never regained it, and the average time of return of strength of the rest was eight and eight-tenths weeks, with extremes of one week and one hundred and four weeks. If one makes due allowance for the inaccuracy of these figures because of individual variations in the evaluation of symptoms, the morbidity from complications and disability is considerable.

FOLLOW-UP DATA

Because of obvious difficulty in selecting from the records cases which all observers will agree are typical of chronic appendicitis the cases were studied in the following groups: first, the complete group of 138 cases without regard to symptoms; second, the cases divided into classes according to (1) the preoperative diagnosis and (2) the postoperative diagnosis, and third, a group of 69 cases in which there was recurrent pain in the right lower quadrant of the abdomen, selected because they seemed to us to be typical of "chronic appendicitis." The criteria we have established for admission of cases to the last-mentioned group are (1) pain located in the right lower quadrant of the abdomen, (2) symptoms of longer than one month's duration and (3) a total number of three or more attacks. We have analyzed the symptoms of this group as carefully

TABLE 4.—Effects of Sex, Length of History and Number of Attacks on Results in Sixty-Nine Cases of Appendectomy for Chronic Appendicitis

	Cases	Condition of Patient			
		Cured	Im- proved	Unim- proved	Worse
Sex					
Male.....	20	15 75.0%	4 20.0%	1 5.0%	0
Female.....	49	24 49.0%	11 22.4%	13 26.4%	1 2.1%
History					
Under 6 months.....	20	14 70.0%	5 25.0%	1 5.0%	0
Over 6 months.....	49	27 55.1%	9 18.4%	12 24.5%	1 2.01%
Number of attacks					
3-6 attacks.....	10	16 81.2%	2 10.0%	1 5.2%	0
More than 6 attacks.....	50	24 48.0%	12 26.0%	12 24.0%	1 2.0%

as possible in order to attempt to uncover diagnostic points which may help us to decide which patients in the future are more likely than others to be cured by appendectomy.

In table 1 are given the results for the whole group. It can be seen that there were 75 per cent favorable results (patients cured or improved) and 25 per cent unfavorable results (patients unimproved or in a worse condition).

11. Bettmann, H. W.: Chronic Appendicitis from the Viewpoint of an Internist. *Ann. Int. Med.* 2: 509 (Dec.) 1928. McClure, R. D.: Appendicitis. *Chronic, Ann. Surg.* 94: 203 (Aug.) 1931. Shelley, J. Davis, Block.⁸

Table 2 contains the results for cases classified according to the surgeon's preoperative diagnosis. Parallel columns show the results when the cases are classified according to the postoperative diagnosis. The preoperative diagnosis gives a better idea of the clinical picture as presented to the surgeon, whereas the postoperative diagnosis indicates more truly the actual pathologic condition present.

In table 3 are given the results for our 69 selected cases of chronic appendicitis. The percentage of favorable results is about the same as for the whole group.

In table 4 the influence of sex, the length of the history of attacks and the number of attacks on the end results in these 69 cases is shown. A short history and few attacks give a more favorable prognosis than do their opposites. Statistical analysis of the other factors, such as the association with menstrual periods, the presence of constipation and the finding of fecaliths, bands and veils at operation, was unsatisfactory because of the inadequacy of the hospital records. Cursory study of these factors, however, confirmed the general impression that any association of pain with the menstrual periods carries a poor prognosis for cure by appendectomy. Among 11 cases in which this association was present there were only 3 in which cure was effected.

COMMENT

The significant point brought out by this study is that in three fourths of these carefully selected cases cure or improvement was effected by appendectomy. Several theoretical explanations may be offered for this fact. Two seem to us to be the most plausible: The first is that the appendix is a blind muscular tube which undergoes peristaltic activity.¹² Many things might cause intermittent spasm of this muscle and produce colic. Increased intraluminal pressure due to a temporary blocking or a kink ("appendiclausic"¹³) or increased pressure in the colon are possible agents. Certain persons have low thresholds for intestinal pain and may experience symptoms from a normal amount of activity of smooth muscle. The second theoretical explanation is one based on psychic factors. The patient and the doctor both are conscious of the danger of acute appendicitis. Commonly the patient first sees the doctor after the attack has subsided. The doctor cannot be sure whether the attack was due to acute appendicitis or not and tells the patient so, warning him to report immediately if another attack occurs. The patient becomes "appendix conscious," symptoms in the right lower quadrant of the abdomen are magnified and often he is never at ease thereafter until the appendix has been removed.

The poorer results in the group of patients with the long histories and the larger number of attacks are perhaps explained by the fact that when a patient complains of "innumerable" attacks for "years" one must be on guard for emotional or mental factors which might influence the picture. Appendectomy as a form of psychotherapy is not good treatment. It may be also that those persons with a short history or with only a few attacks were those with true digestive complaints

of an obscure nature and that appendectomy was only coincidental with the spontaneous remission of symptoms.

We are at a loss to explain the difference in good results in men as opposed to women except on the basis that many women have an appendectomy performed for some gynecologic complaint which does not manifest itself in the form of a gross pathologic condition at operation.

It is proper to offer the criticism that those patients "improved" by operation may represent an unreliable group. Some symptoms were present in all of them. In most of the subdivisions recorded in the tables the percentage of cures was not much more than 50. This emphasizes that even those patients selected for this operation with extreme care often return with their original complaints.

What policy, then, is one to follow with regard to this syndrome? It seems to us that to avoid confusion we should continue to use the term "chronic appendicitis" but recognize frankly that by this we do not necessarily mean that the organ is or has been the seat of an inflammatory process. This is better than using terms which are etymologically more accurate but which are unfamiliar and may lead to confusion. Patients who present themselves with this syndrome should be observed over a period of a few weeks in order to rule out factors of emotion, constipation and menstruation and to determine whether passage of time alone will not produce a cure. Roentgen studies are usually indicated to exclude other causes of pain, and of these the intravenous urogram, the plain abdominal film and the cholecystogram are, in the order mentioned, the most informative. One must not, however, expect the radiologist to uncover any evidence which is pathognomonic of appendical disease. If improvement does not take place while the patient is under observation, the chances of cure or partial relief by appendectomy should be explained to the patient or the parents and a decision for or against operation reached.

SUMMARY AND CONCLUSIONS

1. Chronic appendicitis is a clinical entity consisting of recurrent pain in the right lower quadrant of the abdomen usually unrelated to past or present pathologic conditions in the appendix.

2. In a series of 138 cases in which an uninflamed appendix has been removed for abdominal pain (including 69 cases of typical chronic appendicitis) about three fourths of the patients experienced partial or complete relief of their preoperative symptoms, and one fourth remained unimproved or were made worse.

3. Patients with a long history and those with numerous attacks did not have such a high percentage of good end results as did those with a short history or those with few attacks.

4. Better results were achieved in men than in women.

5. The mortality from the operation is low, but the morbidity and the period of incapacity cannot be ignored.

6. The results described should be regarded as grounds for the adoption of a more conservative rather than a less conservative attitude toward operation for chronic appendicitis.

264 Beacon Street.

12. Cohn, M.: Zur Frage der Beweglichkeit und Bewegung des Wurmfortsatzes, *Fortschr. a. d. Geb. d. Röntgenstrahlen* 38:26 (July) 1928.
Gunn, J. A., and Whitelocke, R. H.: Observations on the Movements of the Isolated Human Vermiform Appendix, *Brit. J. Surg.* 2:92, 1914.
Kalk, H.: Eine Beobachtung über die Bewegungsvorgänge an der Appendix, *Deutsche med. Wchschr.* 63:772 (May 14) 1937.
13. Chermey, L. S.: Appendiclausic, *Surgery* 7:900 (June) 1940.

DANGER OF INTRAVENOUS MERCURIAL INJECTIONS IN NEPHROSIS

MARY CATHERINE TYSON, M.D.

NEW YORK

Mercurial diuretics have been used freely for more than a dozen years. Poll and Stern¹ have emphasized the dangers of extreme dehydration from overenthusiastic use of these drugs, and Greenwald and Jacobson² have presented 2 cases and Wolf³ a third case of sudden death following an intravenous injection of a mercurial diuretic. I wish to present 2 further cases and to point out the striking similarities in all 5 cases.

Greenwald and Jacobson's first case was that of a child aged 2 years with nephrosis who was given 0.5 cc. of neptal (a mercurial diuretic⁴) intramuscularly, followed by 1 cc. intramuscularly four days later. One week later 1 cc. of neptal given intravenously caused dyspnea, cyanosis, cardiac standstill and death within one minute of injection. Their second case was that of a child aged 3 years with nephrosis who received 0.5 cc. of neptal intravenously followed by 0.5 cc. given intravenously six days later. Three days later injection of 0.5 cc. intravenously caused a convulsion, dyspnea, cyanosis and coma within two minutes and death in less than five minutes after injection.

Wolf's patient was a child aged 4 years with nephrosis who was given salyrgan intravenously in gradually increasing doses, up to 1 cc., about a week apart. Within a minute after the fifth injection the child coughed, cried and fell dead.

REPORT OF CASES

CASE 1.—R. B.,⁵ a boy aged 3 years, was admitted for the first time in 1938 with a history of recurrent facial edema in the morning and dependent edema in the evening for one year. He had had persistent, severe albuminuria during this period. He presented the typical clinical picture of nephrosis. A remission occurred coincidentally with the administration of thyroid, and the patient was discharged almost edema free. He was readmitted approximately one year later with severe anasarca. At this time the level of urea nitrogen in the blood was 14 mg. per hundred cubic centimeters and the level of cholesterol 1,550 mg., and there was hypoproteinemia with a reversal of the albumin-globulin ratio, the albumin being 1.3 per cent, and the globulin 2.7 per cent. The urine "boiled solid," and the patient excreted an average of 8 Gm. of albumin a day. Because of the failure of the usual diuretics, he was given 0.5 cc. of mercupurin intravenously on August 5. This drug did not cause any appreciable diuresis. On August 6 1 cc. of mercupurin was given by vein. As soon as the needle was withdrawn the patient had a generalized convulsion with an outcry. The heart beat could not be heard, and respirations became slow and stertorous. Despite the administration of epinephrine intravenously and intracardially, the patient died about one minute after the injection. Partial necropsy revealed considerable congestion of the kidneys and typical changes of chronic lipid nephrosis.

CASE 2.—A. S., a man aged 27, first entered the hospital in 1939 with a typical nephrotic syndrome, which he stated he had had for four months and which had been preceded by intensive antisyphilitic therapy both with arsenicals and with

bismuth compounds. On medication with thyroid and urea the patient's edema cleared considerably and he was discharged, but he returned one month later with generalized anasarca and pneumococcal peritonitis. He recovered from the peritonitis after the administration of sulfapyridine and was then given three injections of 1 cc. each of esidrone⁶ intravenously at six day intervals with good diuresis. He was discharged considerably improved but ignored instructions as to the limitation of fluids and salt and was readmitted one week later with a massive accumulation of edema fluid. At this time the blood contained urea nitrogen 16 mg. per hundred cubic centimeters, cholesterol 760 mg., albumin 1.8 per cent and globulin 1.9 per cent. The urine gave a 4 plus reaction for albumin, and an average of 9 Gm. of albumin was excreted daily.

The patient was given 1 cc. of esidrone intravenously with excellent diuresis. Five days later the dose was repeated. Less than a minute later, within the limits of his circulation time, the patient began to have twitchings about the mouth and stertorous breathing and went into a generalized convulsion. He became deeply cyanotic. The pupils dilated widely and did not react to light. He was comatose, and there was incontinence of urine and stool. Within a minute after the injection respirations had ceased and no cardiac sounds were audible. Artificial respiration was administered, and large doses of epinephrine, nikethamide and aminophylline were injected into the external jugular vein. After several minutes respiration began again, and the heart sounds became audible. For several hours the patient alternated between periods of coma and mania, with several episodes of projectile vomiting. Consciousness returned six hours later, but retrograde amnesia for the three hours preceding the injection was present. The patient, nine months later, is in a mild nephrotic status. No mercurial injections have been given to him since.

Molnár⁷ reported a death twenty minutes after an intraperitoneal injection of mercupurin, but the patient was almost moribund with severe syphilitic aortic insufficiency, which of itself frequently causes a sudden death. In the entire literature, then, there have been only 5 cases of fatal or almost fatal reactions to intravenous injections of mercurial diuretics, and all these 5 have been associated with nephrosis.

Chastain and Mackie⁸ recently were able to kill a few normal dogs with intravenous injections of mercurial diuretics, but only when seven times the maximum human therapeutic dose was given. The major effect was on the ventricle, causing changes in the T waves and the QRS complex and then ventricular fibrillation, with death about three to five minutes after the injection. Chastain and Mackie also, following one of Greenwald and Jacobson's hypotheses, attempted to produce fatal reactions in normal dogs by sensitizing them with intramuscular doses and then giving a large intravenous dose. No reaction could be obtained. This was attempted because it was conjectured that the change from the intramuscular to the intravenous route may have been the cause of sensitization and shock reported in human beings.

Mercurial diuretics are given to cardiac patients in failure in the vast majority of instances, with no reported sudden fatal reactions, although there have been cases reported in which there may have been as many as five hundred such injections. Since the only five such reactions reported occurred in patients with the nephrotic syndrome, I believe that the use of mercurial diuretics is contraindicated in nephrosis.

From the Medical Service of Dr. B. S. Oppenheimer, of Mount Sinai Hospital.

1. Poll, Daniel, and Stern, J. E.: Untoward Effects of Diuresis with Special Reference to Mercurial Diuretics, *Arch. Int. Med.* 58:1087-1094 (Dec.) 1936.

2. Greenwald, H. M., and Jacobson, Seymour: Sudden Death Due to Mercurial Diuretics, *J. Pediatr.* 11:549-546 (Oct.) 1937.

3. Wolf, I. J., and Bongiorno, H. O.: Sudden Death with Salyrgan, *Canad. M. A. J.* 25:73-75 (July) 1931.

4. Hydroxy mercury propanol amido carboxy phenoxy acetic acid (Wallan).

5. From the pediatric service of Dr. Béla Schick.

6. Pyridine dicarboxy β mercuri hydroxypropylamide-theophylline (Ciba).

7. Molnár, Stephan: Plötzlicher Tod nach einer intraperitonealen Norurit-Injektion, *Klin. Wchnschr.* 14:239-240 (Feb. 16) 1935.

8. Chastain, L. L., and Mackie, G. C.: Studies on Toxicity of New Mercurial Diuretic (Sodium Salt of Pyridine-Dicarboxy-Mercuri-Hydroxy-Propyl Amide-Theophylline), *South. Med. & Surg.* 102:5-8 (Jan.) 1941.

With regard to the cause of these reactions, "speed shock"⁹ does not come into consideration, since the shock dose was never more than 1 cc. and in some cases only 0.5 cc. The injection was made slowly in every instance. One can only speculate, with Wolf and with Greenwald and Jacobson, that the reaction was probably an anaphylactic one. I believe that it is connected in some way to the altered blood proteins. Anaphylaxis is further suggested by the fact that no such reactions occurred in any case with initial doses but only after at least two previous doses, which may have been the sensitizing doses preceding the shock dose.

1155 Park Avenue.

ACUTE INFECTIOUS GINGIVO-STOMATITIS

ETIOLOGY, EPIDEMIOLOGY AND CLINICAL PICTURE
OF A COMMON DISORDER CAUSED BY THE
VIRUS OF HERPES SIMPLEX

T. F. McNAIR SCOTT, M.D. (CANTAB.),
F.R.C.P. (LONDON)

AND

ALEX J. STEIGMAN, M.D.

WITH THE TECHNICAL ASSISTANCE OF
JOHN H. CONVEY

PHILADELPHIA

Inflammation of the mouth is a relatively common clinical condition among children, particularly of the outpatient class. In a number of cases the stomatitis is due to some known condition such as trauma, avitaminosis, metallic poisons, thrush, certain uncommon bacterial infections (*Corynebacterium diphtheriae* or *Neisseria gonorrhoeae*) and that which accompanies the exanthems. However, there remains a clinically common group about the cause of which there has been considerable doubt.

Uncertainty as to the etiology of this condition has led to a variety of names, over thirty synonyms in all being applied to it. Some of these are descriptive, e. g. catarrhal, aphthous, membranous or ulcerative, while some are based on the etiology, e. g. "Vincent's" or "fusospirochetal." Although fusospirochetal organisms are frequently encountered in this disease, many authors have questioned their causal relationship. These organisms are not recoverable from all cases presenting a similar clinical appearance, while on the other hand they are recoverable from the gums of from 36 to 94 per cent of normal children.¹ Lichtenberg, Werner and Lueck² were unable to produce lesions in guinea pigs with these organisms, although it has been reported that they could be recovered from simple traumatic ulcers of experimental animals. Black,¹ in reviewing the problems of etiology, suggested that the fusospirochetal organisms were probably secondary invaders, the primary infectious agent being unknown but possibly a virus. Confirmation of this idea appeared to come from the observations of Dodd, Buddingh and John-

ston,³ who tested 28 cases of "gingivostomatitis" for the virus of herpes simplex and were able to recover it from the mouths in 27. The finding of this virus, while highly suggestive, did not solve the problem because the virus of herpes simplex has been recovered from the saliva of normal people.⁴

As Rivers⁵ has stated, the mere finding of a virus in a certain disease does not constitute proof of its causal relationship to that disease. Strong evidence that a virus actually causes a disease in a patient and is not just a coincidental finding is to demonstrate the development of immune bodies against the virus as a result of that disease. In 1939 Burnet and Williams⁶ confirmed the uniform presence of herpes simplex virus in the mouths of their patients and observed the development of antibodies against the virus in their blood. They concluded that stomatitis was a common manifestation of primary infection with herpes virus.

We studied a number of cases of stomatitis in the wards and the outpatient department of the Children's Hospital during the fall and early winter of 1940-1941. It seemed profitable (a) to search for the virus and the appearance of its antibody and thus establish an etiology for this condition; (b) to determine the clinical picture of proved primary herpetic stomatitis and thus eliminate a series of descriptive names for the disease, and (c) to investigate the spread of herpes virus in the families of our patients as an approach to an understanding of the epidemiology of herpes infection.

PLAN OF STUDY

Clinical Material Selected.—Thanks to the cooperation of the resident staff, we were able to see almost all cases of stomatitis at the Children's Hospital and a few at the University of Pennsylvania Hospital. These cases were studied for the presence of herpes simplex virus in the saliva and for the development of antibodies in the blood.

Method of Isolating the Virus.—Swabs taken either directly from the oral lesions in younger or from the saliva in older patients were rubbed fairly vigorously over the scarified cornea of a rabbit. Both eyes were used as a routine. In the absence of virus this procedure caused a mild irritation of the eye which usually clears in two to three days. When virus is present, the rabbit suffers a characteristic infection. From twenty-four hours up to as long as seven days after inoculation minute vesicles, visible only with magnification, occur along the lines of scarification; as a result the cornea looks hazy. In addition there is a severe generalized conjunctivitis involving also the nictitating membrane; a purulent discharge, which is bacteriologically sterile, develops in many cases. Most rabbits recover from their ocular infection except for a corneal scar of varying severity. A few develop an encephalitis eight to twelve days after corneal inoculation, characterized by hyperpyrexia, tremors, pulling of the head to one side, paralysis of the limbs and convulsions. Certain strains consistently caused an encephalitis while others did not. The virus was present in the ocular exudate of infected rabbits for as long as seven days following inoculation, as could be demonstrated by passage of the exudate onto the scarified cornea of another normal rabbit.

9. Hyman, H. T., and Hirschfeld, Samuel: Studies of Velocity and Response to Intravenous Injections, *J. A. M. A.* 96: 1221-1223 (April 11) 1931.

From the Department of Pediatrics, University of Pennsylvania School of Medicine, and the Children's Hospital of Philadelphia.

1. Black, W. C.: Acute Infectious Gingivostomatitis ("Vincent's Stomatitis"), *Am. J. Dis. Child.* 56: 126-158 (July) 1938.

2. Lichtenberg, H. H.; Werner, Marie, and Lueck, Esther V.: Pathogenicity of Fusiform Bacillus and Spirillum of Plaut-Vincent, *J. A. M. A.* 100: 707-711 (March 11) 1933.

3. Dodd, Katharine; Buddingh, John, and Johnston, Leland: Herpetic Stomatitis, *Am. J. Dis. Child.* 58: 907 (Oct.) 1939.

4. Van Rooyen, C. E., and Rhodes, A. J.: Virus Diseases in Man, London, Oxford University Press, 1940.

5. Rivers, T. M.: Viruses and Koch's Postulates, *J. Bact.* 33: 1-12 (Jan.) 1937.

6. Burnet, F. M., and Williams, S. W.: Herpes Simplex: New Point of View, *M. J. Australia* 1: 637-642 (April 29) 1939.

Histologic sections of the cornea, within forty-eight hours of inoculation, showed the presence of acidophilic intranuclear inclusion bodies characteristic of herpes simplex. The antigenic relationship of eight strains of virus from cases of stomatitis to known herpes simplex virus was shown by the survival of these infected rabbits on reinoculation either intraperitoneally or intracerebrally, with standard HF strain (supplied by the Rockefeller Institute, New York City). Since cage infection by way of the mouth with resulting encephalitis is known to occur,⁷ and since special precautions were not taken to avoid this, we considered as carrying virus only a patient whose saliva produced a definite keratoconjunctivitis. In addition to establishing the disease in rabbits we were usually able to cause herpetic encephalitis in mice by injecting them intracerebrally with an emulsion of nictitating membrane removed from an infected rabbit's eye. Animals recovering from this infection, from various strains, resisted a test inoculation with HF strain. The virus could be recovered from saliva that had been kept at ice box temperature for as long as three days, but it had disappeared from saliva that had been kept at room temperature for nineteen hours.

Method of Testing for Development of Antibodies.—During the acute stage of the illness, venous blood was collected sterilely from the patient and allowed to clot. The serum was removed and kept in the ice box. At various times after the onset of the infection, usually three to four weeks, blood was similarly collected and treated. The tests for neutralizing antibodies were made in mice as follows:

From mouse brains infected with the HF strain of herpes virus a 10 per cent emulsion was made in nutrient broth, centrifuged and tenfold dilutions made with the same diluent. Each dilution was mixed with an equal amount of the undiluted serum to be tested. After incubation for one hour at room temperature and one to three hours at ice box temperature the mixture was inoculated intracerebrally into each of 4 mice in 0.03 cc. amounts. The mice were observed for ten days, at which time the experiment was terminated. The neutralizing power of each serum was calculated by the 50 per cent endpoint method of Reed and Muench.⁸ For purposes of standardization, a known herpes immune rabbit serum was included in each test, as was a normal rabbit serum. Human serums were compared with the immune rabbit serum and graded as "strong," "moderate," "weak" or "absent" according to whether their neutralizing potency was 30 to 100 per cent or more, 10 to 30 per cent, 3 to 10 per cent or below 3 per cent of that of the immune rabbit's serum.

*Bacteriologic Examinations.*⁹—In the majority of the cases studied, smears and cultures of the mouth lesions or saliva were made for the isolation of fusospirochetal or other organisms.

Analysis of Data.—Thirty-three patients actually suffering from or having just recovered from acute stomatitis were studied. Twenty-six were studied for the presence of virus in the mouth; the serum of 22 of these was tested for the development of antibodies. An additional 7 patients were tested for antibody development without testing for the presence of virus in the mouth. These patients could be grouped into the following divisions according to the behavior either

of their neutralizing antibodies alone or in conjunction with the presence or absence of virus in their saliva:

(a) *Primary Infections.*—The development of antibodies against herpes virus during convalescence from their acute stomatitis occurred in 21, and these were considered as being examples of primary herpetic stomatitis. Herpes virus was recovered from 15 of these 21 patients, not being recovered from 3 and not tested for in 3.

(b) *Probable Primary Infections.*—Two patients, E. Br. and S. G., were not tested until the ninth and fourteenth day of their illness respectively, at which time they both showed "strong" neutralizing antibodies in their blood. The presence of these antibodies could be explained either by the occurrence of a previous herpetic infection or by an early serologic response to this present illness. No evidence of virus was found in E. Br., and S. G. was not tested. In the absence of a history of recurrent stomatitis it is probable that these were primary infections and that serum taken earlier in this disease would have shown no antibodies. However, on the basis of the serologic data at hand it is also possible that they were cases of recurrent infection.

(c) *Recurrent Infections.*—This was thought to be present in two patients, C. S. and U. B. In both of these virus was demonstrated in the saliva at a time when the serum contained strong neutralizing antibodies. The former was examined three days after the onset of stomatitis but he had had herpes labialis sixteen days previously, which could account for the presence of antibodies; there was also a history of two attacks of severe ulcerative stomatitis. The latter patient had saliva and blood examined on the first day of his illness.

(d) *Gingivostomatitis Apparently Not Herpetic.*—Three patients were observed in this group; V. B., E. W. and A. Br. Both V. B. and E. W. showed fever and gingivitis, while V. B. showed some ulcerations of the buccal mucous membrane in addition. Virus was not tested for, but neither developed neutralizing antibodies during convalescence. A. Br. had shown ulcerations of the buccal mucous membrane during the catarrhal stage of measles, five weeks previously. At the time of examination she presented a small abraded area on her lower gum which lasted for several weeks. Virus was not tested for, but no neutralizing antibodies were detected on two occasions four weeks apart. In this instance the oral ulcerations which are occasionally seen in measles were not herpetic in origin. The cause of stomatitis in these 3 patients, although clinically somewhat similar to the primary cases described, was undetermined.

(e) *Other Varieties of Stomatitis.*—In order to provide additional evidence for the specificity of herpetic infection, 5 patients suffering from other clinical types of stomatitis were investigated. Two of these, E. C., aged 5 months, and J. M., 3 months, had clinical thrush, confirmed by the demonstration of *Monilia albicans* on smear, and no virus was isolated. No examination of their blood was made. H. E., aged 10 years, had lymphatic leukemia with a marked gingivostomatitis and oral fetor. Fusospirochetal organisms were present, but herpes virus was not isolated. His blood contained neutralizing antibodies. Although the blood was not tested until about three weeks after the onset of his stomatitis, his mouth still showed marked clinical evidence of disease; hence herpes virus might have been expected

7. Goodpasture, E. W.: Pathways of Infection of Central Nervous System in Herpetic Encephalitis of Rabbits Contracted by Contact, *Am. J. Path.* 1: 29-46 (Jan.) 1925.

8. Reed, L. J., and Muench, Hugo: Simple Method of Estimating Fifty per Cent Endpoints, *Am. J. Hyg.* 27: 493-497 (May) 1938.

9. These examinations were made by Dr. Arthur Waltz, Director of Clinical Laboratories.

TABLE 1.—Cases of Herpetic Stomatitis

Patient, Age	Sex, Race	Date of Onset	History and Clinical Condition of the Mouth	Highest Temp., F	Duration	Presence of Virus in Saliva	Presence of Antibodies		Known Contact	
							Early	Convalescent		
(a) Primary Infections										
1 E B 5 yrs.	♂ W	11/15/40	Complained of sore mouth; red gums; scattered "aph- thous" ulcers	102 rectal	10 days	— (10)†	Absent (6)‡	Strong (30)‡	Sister 20 mos., stomatitis 11/10 to 11/15/40	
2 Mrs B 24 yrs.	♀ W	11/20/40	Complained of sore mouth; had ulcers "like her children"	?	10 days	+	(1)	Absent (1)	Her children, E B and sister	
3 W B 15 mos	♂ N	8/23/40	Irritable 2 days; enlarged gland; "fever"; gums red and swollen; 3 ulcers on tongue	100 rectal	5 days	+	(2)	Absent (4)	Strong (26)	None
4 S B 11 yrs	♂ N	11/18/40	Complained of sore throat; gums red, swollen, numerous ulcers, especially on fauces and tonsils	102 oral	10 days	+	(6)	Absent (6)	Strong (27)	None
5 L Br. 7 yrs	♂ N	11/11/40	Sore mouth coming on after tooth extraction; gums red and swollen; one round ulcer of lower lip	160 oral	14 days	+	(3)	Absent (3)	Strong (29)	Brothers with stomatitis, 11/6 and 11/8/40
6 R Br 11 yrs	♂ N	11/ 8/40	Complained of sore gums; gums red, swollen and bleed- ing; no ulcers	100 4 oral	14 days	—	(6)	Absent (6)	Strong (47)	Brother with stomatitis, 11/6/40; see case 22
7 V Br 8 yrs	♀ N	11/11/40	Complained of sore gums, gums red, swollen, no ulcers	99 oral	9 days	—	(3)	Absent (3)	Strong (39)	Same as case 5
8 W C § 15 mos.	♂ W	9/ 7/40	"Chewed moth ball 3 days before onset," "sore throat," gums red and swollen; ulcers of palate, cheek and tongue, pustules about mouth	102 rectal	9 days	+	(7)	Absent (7)	Strong (133)	None
9 M C 2 yrs	♀ W	9/20/40	Irritable 3 days; "ulcers" noted in mouth; gums red and swollen	101 rectal	12 days	N T	Absent (4)	Strong (84)	None	
10 L C 28 mos	♀ W	9/30/40	Fever, abdominal pain, vom- iting for 1 week, then sore mouth, gums red, numerous oral ulcers including tonsils	105 rectal	16 days	+	(4)†	Absent (4)	Moderate (61)	Brother 8 yrs., stomatitis 1 week before onset
11 R G 6 yrs	♂ N	10/12/40	Fever 3 days, sore throat 1 day; gums red, swollen, ves- icles on palate and tongue	102 4 oral	10 days	+	(4)	Absent (4)	Strong (51)	None
12 A G 6 yrs.	♂ N	12/21/40	Sore mouth and fever; gums red and swollen; many ulcers	100 8 oral	11 days	+	(4)	Absent (4)	Strong (26)	Sister 2½ yrs., 12/13/40 with stomatitis; see case 23
13 H G 4 yrs	♀ N	12/21/40	Sore mouth and fever; gums red and swollen; many ulcers	102 rectal	11 days	+	(4)	Absent (4)	Strong (26)	Sister, case 23
14 R I 11 yrs	♂ W	9/ 3/40	Headache, malaise, fever; gums red and swollen; many ulcers, including pharynx	104 oral	16 days	+	(3)	Absent (3)	Strong (36)	Brother 4 yrs., stomatitis 3 days before, sister 14 yrs. repeated "cold sores"
15 P J. 8 yrs	♀ N	9/19/40	Sore throat; "follicular ton- sillitis"; no oral ulcers noted	103 oral	7 days	N T	Absent (8)	Strong (78)	None	
16 H J 2½ yrs	♂ N	9/22/40	Sore mouth; urinary fre- quency; gums red and swol- len; numerous ulcers	99 rectal	10 days	+	(5; 14)	Absent (5)	Strong (52)	Sister, case 15
17 J M 9 yrs	♀ N	10/ 1/40	Sore throat 5 days, "fever"; gums red and swollen; many ulcers, especially tonsils and pharynx	101 2 oral	11 days	+	(8)	Absent (8)	Strong (67)	None
18 A P. 2½ yrs	♀ W	9/29/40	Sore mouth 6 days; fever 2 days; gums red and swollen, numerous ulcers	99 rectal	16 days	N T	Weak (10)	Strong (16)	None	
19 R P 12 mos	♂ W	8/31/40	Refused food 2 days, vomit- ing 1 day, gums red and swollen; numerous ulcers	102 4 rectal	14 days	+	(6)	Absent (6)	Strong (26)	None
20 S S 3½ yrs	♀ W	11/ 1/40	Sore mouth 5 days; gums red and swollen; numerous ulcers, impetigo of face	103 rectal	11 days	+	(7)	Weak (7)	Strong (54)	None
21 E. W 4 yrs	♀ W	8/18/40	"Lip scratched by dog"; sore mouth, fever, gums red and swollen; numerous ulcers	103 rectal	11 days	+	(4)	Absent (7)	Moderate (27)	None
(b) Probable Primary Infection										
22 E Br 10 yrs	♂ N	11/ 6/40	Sent home from school, "trench mouth"; gums spongy; bleed easily, no ulcers	98 6 oral	14 days	—	(8)	Strong (8)	Strong (43)	None (see cases 5, 6 and 7)
23 S G 2½ yrs.	♀ N	12/13/40	Fever; urinary frequency 5 days then sore mouth, gums red and swollen; many ulcers	101 8 rectal	14 days	N T	Strong (14)	Strong (42)	None (see cases 12 and 13)	
(c) Recurrent Infections										
24 U B 10 yrs	♂ N	11/ 2/40	Complained of soreness under tongue, small vesicles and ulcers on palate, gums slightly reddened	98 oral	13 days	+	(1; 13)	Strong (1)	N T	None
25 C S § 11 yrs	♂ W	2/16/40	Two attacks of stomatitis in past year; herpes of lips for 2 weeks, then sore mouth; gums red and swollen; scat- tered ulcers and occasional vesicles	98 oral	?	+	(4)*	Strong (4)	N. T	None

* Seventeen days after herpes labialis.

† After onset of stomatitis

‡ Numbers in parentheses indicate days after onset

§ Case referred by Dr. W. F. Nelson, Temple University Hospital

¶ Case referred by Dr. H. L. Davis, Trenton, N. J.

N T, not tested.

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U. M. L. Medical College

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still to be present if it had been the causative agent. It seems more reasonable to suppose that his antibodies were the result of some previous herpetic infection. G. T., aged 8 years, had a gingivitis associated with extensive dental caries. No virus was isolated. His serum did not contain immune bodies against herpes although studied twenty-three days after the condition of the mouth was first noted, indicating that herpes virus was not etiologically involved in this case. F. H., aged 3 months, was an infant with a prolonged and finally fatal digestive upset, who developed a stomatitis on the basis of what was considered avitaminosis. No virus was isolated.

CLINICAL CHARACTERISTICS OF PRIMARY HERPETIC STOMATITIS

Analysis of these cases indicates that there are 21 on which a clinical picture of the disease can be based. It will be seen that this picture closely resembles the description given by Black¹ of acute infectious gingivostomatitis, the etiology of which was at that time unknown. This disease appears to be an acute systemic infection characterized by fever, irritability, soreness of

TABLE 2.—Bacteriologic Data in Primary Herpetic Stomatitis

Number of Cases of Stomatitis	Number Tested by Smear	Vincent's Present	Organisms Absent	Number Tested by Culture	Normal Flora	Hemo- lytic Strepto- cocci
21	13	8	5	9	7	2

the mouth, red swollen gums, oral fetor and regional lymphadenopathy. As with other infections, the severity of the disease varies in different patients.

Age, Sex, Race Incidence.—The ages ranged from 12 months to 12 years; in addition there was 1 adult of 24 years. Forty per cent of the cases occurred under 3 years of age, 70 per cent under 6 years of age. The sex ratio was almost exactly equal, and the racial incidence was almost in direct proportion to the ratio of white persons and Negroes attending the Children's Hospital.

Nutrition.—No consistent alteration of nutritional state from the normal was noted. Inquiry was made into the dietary of many of these patients, and detailed dietary surveys were made in some. No specific nutritional deficiency could be established.

Symptomatology.—Of the 21 cases, the onset was insidious in 7, the child being ill for two to four days before the mother was aware of the location of the trouble. In the remaining 14 the mother soon realized that there was some trouble in the mouth. In 5 cases an upper respiratory infection coincided with the onset of the stomatitis. The older children were irritable, fretful and lacked their usual interest in play, while the infants would cry for no apparent reason, refuse to eat, and drool. Within the next day or two the articulate children would complain of a sore mouth, perhaps with pain on swallowing, and refuse solid food. The younger children were generally miserable, refusing food and sometimes even fluids. Within two to six days this phase of local pain would disappear and the child would then resume his dietary gratefully.

Physical Findings.—The constitutional reaction varied in degree with the severity of the infection. In some, dehydration and acidosis complicated the clinical evaluation of the systemic illness. Fever was present

in all but 3 patients, rectal temperatures ranging between 99 F. and 105 F., with an average height of 101 F. and a duration of two to three days. Some of the children had fever for two to three days during the prodromal period and became afebrile at the time of the oral eruption. In all 21 cases there was definite involvement of the gums; in most of them the gums were generally swollen, some almost covering the teeth, and many bled easily; a few mild cases showed only a bright red line along the dental margin. In early cases small pinhead sized vesicles could be seen occasionally, but these soon ruptured, leaving round or irregular ovoid yellowish white superficial ulcers with a surrounding red halo. Such ulcers were present in 18 of the patients, being sparse in some and innumerable in others. No portion of the oral lining was immune, although the tongue and buccal mucosae were most frequently involved. The pharynx and soft palate were involved in 5 cases, and in these sore throat was the first complaint in 4. Three of our patients had no visible ulcers. Regional lymphadenopathy was present in 18 patients, the submaxillary nodes varying from hazel-nut to walnut size. This sign appeared very early in the disease, before the secondary infection was marked, and remained for as long as four to five weeks after the mouth was healed. Oral fetor was noted in all.

Complications.—In 3 of the children, each under 2½ years of age, the degree of dehydration and acidosis warranted administration of parenteral fluid. There were 3 cases of impetigo of the face, probably infected herpetic lesions, and 1 case of paronychia in a child who sucked his thumb.

Treatment and Course.—These patients were routinely treated locally with 1 per cent aqueous methyl rosaniline (gentian violet). Only 1 patient received 1 or 2 doses of chromium trioxide. Under routine treatment of this sort, the duration of visible signs in the mouth varied between six and sixteen days, averaging eleven days. The ulcerations usually healed in five to six days after their appearance. Symptomatic improvement, as we have already stated, occurs before local lesions disappear. The swelling of the gums and the regional lymphadenopathy, which were the first to appear, were the last to go. This course of events corresponds closely to that described by Lichtenberg and his co-workers,² who refrained from using any local treatment in a clinically similar group of cases. The disease then appears to be self limited, and conclusions as to the benefits of various therapeutic agents must be based on this knowledge.

CLINICAL FEATURES OF RECURRENT HERPETIC STOMATITIS

The 2 cases of recurrent herpetic stomatitis presented in general a picture similar to the one described. In U. B. the ulceration was mild and disappeared quite quickly; there were no general symptoms. In C. S. an extensive ulceration was present throughout the mouth, with consequent pain on eating, but systemic symptoms were mild.

BACTERIOLOGY

Table 2 gives the result of the bacteriologic investigation of those patients who had suffered from "herpetic stomatitis." It will be seen that, although fusospirochetal organisms are found most frequently, there is no uniformity in the bacteriologic findings.

EPIDEMIOLOGY

Familial Incidence.—It is interesting that most workers on this particular type of stomatitis, which may now be designated as primary herpetic stomatitis, have suggested that family epidemics are uncommon.¹⁰ Black¹ found that only 10 per cent of his patients had a history of exposure to patients with stomatitis and pointed out that other children were in contact with patients and did not contract the disease. In our series of 21 cases of primary herpetic stomatitis there was a history of contact in 10, or almost 50 per cent. This would indicate that in a susceptible population the disease is highly contagious. In other studies no distinction has been made between children who have previously been infected and those who have not. The difference of opinion as to the contagiousness of this disease would therefore be due to a basic difference in the population at risk.

Table 3 summarizes the sequence of events in three family epidemics. It is to be noted that the first patient

That the first may well have been a factor in some of our cases is indicated by the history of recurrent attacks of herpes labialis in other members of the family, although direct contact with such a case was not established. It is known that the saliva of patients with recurrent labial herpes may contain herpes virus during the attack and even between the attacks.⁴ We were able to demonstrate virus in the saliva during an attack of recurrent herpes labialis in a healthy adult. We also demonstrated virus in the saliva of a boy of 4 years during an attack of herpes labialis accompanying pneumonia. Care was taken to avoid contact between the saliva tested and the contents of the herpetic vesicles. Both of these patients carried "strong" neutralizing antibodies in their blood at the time of testing their saliva, indicating that these patients had suffered from previous herpetic infection. It is interesting that Parsons,¹¹ in his study of stomatitis in childhood, noted that in a number of patients there had been contact with cases of herpes labialis. In connection with

TABLE 3.—Three Family Epidemics

Family	Patient	Age	Date of Onset	Clinical Stomatitis	Virus in Saliva	Date	Neutralizing Antibodies			
							Acute	Date	Convalescent	Date
Brown	E. B.	10 yrs.	11/ 6/40	Gingivitis	Negative	11/13/40	Strong	11/13/40	Moderate	12/19/40
	R. B.	11 yrs.	11/ 8/40	Gingivitis	Negative	11/13/40	Absent	11/13/40	Strong	12/19/40
	L. B.	7 yrs.	11/11/40	Gingivitis and ulcers	Present	11/13/40	Absent	11/13/40	Strong	12/19/40
	V. B.	8 yrs.	11/11/40	Gingivitis	Negative	11/13/40	Absent	11/13/40	Moderate	12/19/40
	C. B.	3½ yrs.	11/17/40	Gingivitis and ulcers	N. T.	.....	Absent	11/20/40	N. T.	.....
	Lo. B.*.....	5½ yrs.	11/24/40	Mild sore mouth	N. T.	.....	N. T.	.....	N. T.	.....
	Mr. B. (father)	36 yrs.	.....	No disease	Negative	11/13/40	Strong	11/13/40	Strong	11/13/40
Gardner	S. G.	2½ yrs.	12/13/40	Gingivitis and ulcers	N. T.	.....	Strong	12/26/40	Strong	1/15/41
	A. G.	6½ yrs.	12/21/40	Gingivitis and ulcers	Positive	12/23/40	Absent	12/23/40	Strong	1/15/41
	H. G.	4 yrs.	12/21/40	Gingivitis and ulcers	Positive	12/23/40	Absent	12/23/40	Strong	1/15/41
	Mrs. G.	30 yrs.	.....	No disease	Negative	1/15/41	Moderate	12/23/40	Strong	1/15/41
Berger	S. B.	20 mos.	11/10/40	"Mild stomatitis"	N. T.	.....	N. T.	.....	Strong	12/11/40
	E. B.	5 yrs.	11/15/40	Gingivitis and ulcers	Negative	11/24/40	Absent	11/20/40	Strong	12/14/40
	Mrs. B.	24 yrs.	11/20/40	"Severe stomatitis"	Present	11/20/40	Absent	11/20/40	Strong	12/14/40

* History from mother, not seen in clinic after 11/20/40, when she had no lesions.

in each family was not seen until late in the disease, when the lesions were almost or quite healed. For this reason the saliva was found free of virus or was not tested. The disease seemed to spread first to the child closest in age to the original patient, as would be expected in a contact infection. In one family the mother, having escaped the infection in youth, was the last to get a primary herpetic stomatitis.

Incubation.—From those families studied, it would appear that the incubation period of herpes simplex can vary between three and nine days. Owing to the continuous exposure that occurred in most instances, it is possible that it is longer than this in some cases.

Focus of Virus.—When no contact case of stomatitis is found, as was usual in the first case in each family, it must be assumed that the susceptible patient gets infection from some other source. Two possible sources come to mind: one a contact suffering from some other manifestation of herpes, such as herpes labialis, in which case infection might be received from vesicle contents or the saliva; the other a contact carrying the virus in the saliva without clinical manifestation of herpes.

the second possibility (healthy carriers) we have made some investigations concerning two aspects. In the first place, it seemed possible that a patient who had recovered from stomatitis might carry the virus in his saliva for a certain length of time after all clinical evidence of the disease had disappeared. The saliva of 5 such patients was tested for virus. In 2 patients, thirteen and fourteen days after onset, when the mouth was entirely healed, virus was demonstrable, while in a third who had clinically recovered no virus was found at ten days. The fourth patient was tested two and one-half months after a clinically typical attack of herpetic stomatitis, and no evidence of virus was found. The fifth continued to show virus in his saliva on five occasions up to seven weeks after the beginning of his illness. When tested at ten weeks and twenty weeks no virus was demonstrable, but it was present again at twenty-two weeks. It seems, therefore, that occasionally a patient who has recovered can become a carrier of the virus, temporarily at least.

In the second place, if there is a focus among adults without herpetic lesions the most probable contact for

10. Dodd, Buddingh and Johnston.³ Burnet and Williams.⁶

11. Parsons, C. G.: Stomatitis in Childhood, Arch. Dis. Childhood 15: 43-54 (March) 1940.

a child would be one of the parents, particularly the mother. To investigate this we searched for virus in the saliva of thirteen parents whose children had or had had stomatitis. Of these thirteen parents, nine were mothers and four were fathers. In none of the fathers was evidence of virus found on the single occasion on which each was tested. Of the nine mothers, seven were tested on a single occasion, and no evidence of virus was found in any of them. In each of the seven women, blood antibodies were demonstrable as "strong" or "moderate," indicating a previous infection with the herpes virus. The other two mothers, who also had "strong" neutralizing antibodies in their blood, were examined more than once. One of the mothers was examined on two occasions, once in an intermenstrual period and once six days later, at the time when flow was expected. The saliva on the first occasion had no virus, but the second one did. Another mother was examined on three occasions, once eleven days after onset of the menstrual period, once four days after onset, which also happened to be eleven days after an attack of labial herpes, and once at a time which in retrospect was about the time of a period. In the intermenstrual examination no virus could be demonstrated in the saliva, although virus was easily demonstrated on the other two occasions. From this small number of observations it seems that virus may appear in the saliva of an adult particularly during the menstrual period, a time when recurrent attacks of herpes of the skin are known to occur. Thus without any evidence of oral involvement a mother may possibly provide a focus of infection for her susceptible children.

Mechanism of Infection.—No contribution as to the mechanism of infection arose out of our study. Trauma coincided with the onset of the stomatitis in 2 cases, 1 a tooth extraction and another a scratch by a dog. An accompanying upper respiratory infection was present in 5 cases. Either of these may have been a factor in lowering resistance, but in the majority there was no such incident and the disease occurred spontaneously. No evidence of gross dietary deficiency as a factor of lowered resistance was noted.

COMMENT

The work just presented confirms the conclusions arrived at previously by Black¹ on clinical and by Dodd, Buddingh and Johnston² and Burnet and Williams³ on etiologic grounds that the commonest type of stomatitis in children above 1 year of age is an etiologic entity. The relative insusceptibility of very young infants to this variety of oral disease is interesting and is now being investigated. Since there seems now to be little doubt that this stomatitis is the main clinical manifestation of primary infection with the virus of herpes simplex, a rearrangement of the usual classification of stomatitis is perhaps indicated. The descriptive terms "catarrhal," "aphthous," "ulcerative" and "membranous" can now be seen to apply to different degrees of severity of this herpetic infection. We have seen examples of each of these types among the group of cases studied. Such terms can then be dispensed with and stomatitis classified etiologically.

There is a type of stomatitis already known as "herpetic stomatitis," which is described as a vesicular stomatitis with slight if any constitutional symptoms. In suggesting that the term herpetic stomatitis be

applied to the common gingivostomatitis discussed in this paper, we feel that it is important to subdivide herpetic stomatitis into two groups, primary and recurrent. The primary disease is the common stomatitis of young children and is usually accompanied by considerable constitutional symptoms which do not always parallel the severity of the oral lesions. This occurs in people who have not previously been infected with the herpes virus. The recurrent disease may occur at any age, after a primary infection with herpes, and is analogous to recurrent herpes of the lips and elsewhere. The local lesion may be severe, but as a rule the constitutional symptoms are mild if present at all. This recurrent variety is that which resembles the descriptions at present given in the textbooks for "herpetic stomatitis."

Although this classification would include the great majority of cases of stomatitis at present without etiologic grouping, there will certainly be cases which do not fall into this group and must still be classed as of unknown etiology. We think it is important to divorce the terms "ulcerative" and "Vincent's," which have long lived together synonymously. If there are cases in which the fusospirochetal organisms are of true etiologic significance, they can be included in the group that now includes other bacteriologically induced stomatitis, e. g., pneumococcic, gonococcic. Other clinical varieties of stomatitis may well remain in their present classification.

Apart from the importance of the conception of a primary herpetic infection in relation to stomatitis, it is of interest to speculate on two other conditions: herpetic fever and trench mouth. The former has been the subject of a number of reports in the last decade.¹² These cases have all occurred in people above the age group commonly affected by primary herpetic stomatitis. It is conceivable that they represent a primary herpetic infection in older people who have escaped a childhood infection. It will certainly be important to investigate this possibility serologically in such cases as are encountered in the future. Trench mouth is generally considered to be a very contagious disease for which the fusospirochetal group of organisms are responsible. In light of the clinically similar stomatitis of childhood, in which these organisms appear to be only of secondary importance, an investigation for herpes infection might be illuminating.

As has been stated by others, the host-parasite relationship between herpes virus and man is apparently that of an almost perfect symbiosis, similar to that existing between B virus and the *Macacus rhesus* monkey and pseudo rabies and the hog.⁶ It is interesting to note that these three viruses have a partial immunologic relationship.¹³

The adopted host of the herpes virus shows clinical evidence of infection only during the time of the initial invasion by the virus, often in the form of the stomatitis just described, and at intervals in the form of a crop of herpetic vesicles or recurrent herpetic stomatitis, when "host resistance" is lowered by fever, trauma

12. Long, P. H.: Herpetic Pharyngitis and Stomatitis Report of Three Cases, *J. Clin. Investigation* 12:1119-1125 (Nov.) 1933. Youmans, J. B.: Herpetic Fever with Stomatitis: Report and Discussion of Case in Which Virus Was Isolated, *South. M. J.* 25:228-233 (March) 1932. Levine, H. D.; Hoerr, S. O., and Allanson, J. C.: Vesicular Pharyngitis and Stomatitis: Unusual Epidemic of Possible Herpetic Origin, *J. A. M. A.* 112:2020-2022 (May 20) 1939.

13. Sabin, A. B.: Studies on B Virus: Immunological Identity of Virus Isolated from Human Case of Ascending Myelitis Associated with Visceral Necrosis, *Brit. J. Exper. Path.* 15:248-268 (Aug.) 1934.

or the like. Whether subclinical infection occurs is unknown. Rarely more extensive damage to the host may be brought about by the virus, as in the 4 weeks old infant who died of encephalitis described by Smith, Lennette and Reames.¹⁴ There are no data presented to indicate whether or not this was the manifestation of a primary infection. There is no unanimity of opinion in favor of this virus causing encephalitis lethargica A (von Economo's disease), as was once held.

In the normal course of events the parasite establishes itself widely in the population, since 65 to 90 per cent of adults have herpes neutralizing substances in their blood.¹⁵ The period of invasion must coincide with childhood, since Weyer¹⁶ found only 14 per cent of children under 5 years carrying antibodies, while Burnet and Williams⁶ found no antibodies in the blood of 31 out of 42 infants between 6 and 24 months of age. Since this is the period during which stomatitis occurs in its greatest frequency, it would seem that stomatitis was a common manifestation of that invasion. Whether at that time the virus is spread widely through the body by way of the blood stream is a point that deserves study, since there is great diversity of opinion as to whether herpes virus can ever be found in the blood.⁴ Once an individual has been infected with the virus, that individual is liable to become a carrier of the virus, although at the same time having a high titer of immune bodies in the blood. Recurrences of the infection, as previously stated, tend to occur in this group of people.

Those not subject to recurrent herpetic infections are the ones who do not show serum antibodies against herpes. Whether this is a peculiar individual resistance or a fortunate avoidance of intimate exposure is uncertain. However, one of our patients, Mls. B., demonstrates that such an adult can become infected in the presence of intimate enough exposure. An answer to some of these problems may be found by a closer study of this virus in connection with the susceptible population of early childhood.

SUMMARY

1. The etiology of "acute infectious gingivostomatitis" of childhood is clarified by the isolation of the virus of herpes simplex from the mouths of patients and by the development of herpes neutralizing antibodies in their blood during convalescence.

2. The clinical picture of an acute systemic infection characterized by fever, irritability, soreness of the mouth, red swollen gums, oral fetor and regional lymphadenopathy is indicative of primary herpetic stomatitis.

3. Herpetic stomatitis occurs in two forms: primary and recurrent. The latter is not a systemic infection.

4. Infection spreads readily through a susceptible population. Evidence suggests possible sources of endemic foci with special reference to mothers.

14 Smith, M. G., Lennette, E. H., and Reames, H. R. Isolation of the Virus of Herpes Simplex and the Demonstration of Intracellular Inclusions in a Case of Acute Encephalitis, *Am J Path* **17**: 55 69 (Jan) 1941

15 Andrewes, C. H., and Carmichael, E. A. Note on Presence of Antibodies to Herpes Virus in Post Encephalitic and Other Human Sera, *Lancet* **1**: 857-858 (April 19) 1930

16 Weyer, E. R.: Herpes Antiviral Substance Distribution in Various Age Groups and Apparent Absence in Individuals Susceptible to Polymyelin, *Proc. Soc. Exper. Biol. & Med* **30**: 309 314 (Dec) 1932

THE GASTRIC MUCOSA OF CHRONIC ALCOHOLIC ADDICTS

A GASTROSCOPIC STUDY

SEYMOUR GRAY, M.D.

AND

RUDOLF SCHINDLER, M.D.

CHICAGO

The part that alcohol plays in producing acute gastritis has been known since 1833, when William Beaumont¹ first described the "erythema and aphthous patches" and the mucopurulent exudates with blood-tinged red mucus that appeared in St. Martin's stomach after an alcoholic debauch. These observations were confirmed later by Saito,² who instilled 50 per cent alcohol into the Pavlov pouch of a dog and observed the mucus and the inflammatory changes which resulted. Henning,³ Thomsen⁴ and Ostrouch⁵ described the microscopic structural changes which alcohol produced in the gastric epithelium of animals. Ebstein⁶ produced acute alcoholic gastritis in dogs and observed congestion, edema, hemorrhages and erosions of the mucosa. He found microscopic pathologic changes only in the chief cells of the gastric glands. Faber and Lange⁷ concluded from their pathologic studies that alcohol is an important factor in producing acute gastritis.

That the use of alcohol over a long period can produce chronic gastritis, however, has not been demonstrated conclusively. Beazell and Ivy⁸ have noted that "although alcoholism has been acknowledged generally to cause chronic gastritis, decisive evidence is still lacking." Eusterman and Balfour⁹ expressed the belief that "this subject cannot be discussed with any degree of assurance."

There are two conflicting schools of thought concerning the effect of chronic alcoholism on the gastric mucosa. One group of observers emphasizes the injurious effect of alcohol on the stomach, while the second group believes that alcohol does not play an important part in causing chronic gastritis.

Bamberger¹⁰ in 1855 was among the earliest of the former group to attribute chronic gastritis to alcoholism. Kremiinsky¹¹ in 1868 observed slight inflammation, edema, thickening and pigmentation in dogs' stomachs after the administration of alcohol. Ruge¹² in 1870

From the Department of Medicine, the University of Chicago.

1 Beaumont, William. Experiments and Observations on the Gastric Juice and the Physiology of Digestion, Plattsburg, J. P. Allen, 1833, p. 237. The Physiology of Digestion with Experiments on the Gastric Juices, Burlington, Chauncey Goodrich, 1847, p. 250.

2 Saito, S. Zur pathologischen Physiologie der durch Ätzung erzeugten Schleimhauterkrankung des Magens, *Virchows Arch f. path Anat* **185**: 524, 1906

3 Henning, N. Die Entzündung des Magens, Leipzig, Johann Ambrosius Barth, 1934, p. 40. Ueber die Entzündung des Magens, *Deutsch med Wchnschr*, **60**: 1455, 1934.

4 Thomsen, E. Études sur l'achylie neurogène et cellulaire, *Acta med Scandinav*, **61**: 522, 1925

5 Ostrouch, M. Action de l'alcool éthylique sur les structures de l'estomac, *Arch. de biol* **43**: 321, 1932.

6 Ebstein, W. Ueber die Veränderungen, welche die Magenschleimhaut durch die Einverleibung von Alkohol und Phosphor in den Magen erleidet, *Virchows Arch f. path Anat* **55**: 469, 1872

7 Faber, K., and Lange, G. Die Pathogenese und Aetologie der chronischen Achylia gastrica, *Ztschr f. klin. Med* **66**: 53, 1908. Faber, K. Chronic Gastritis Its Relation to Achylia and Ulcer, *Lancet* **2**: 901, 1927. The Etiology and Pathogenesis of Achylia Gastrica, *Am J. M. Sc* **172**: 1, 1926

8 Beazell, J. M., and Ivy, A. C. The Influence of Alcohol on the Digestive Tract, *Quart J Stud Alcohol* **1**: 45, 1940

9 Eusterman, G. B., and Balfour, D. C. The Stomach and Duodenum, Philadelphia, W. B. Saunders Company, 1935, p. 518

10 Bamberger, H. Chronischer Magencatarrh, in *Virchow, R. Handbuch der speziellen Pathologie und Therapie*, Erlangen, Ferdinand Enke, 1855, vol. 3, p. 302

11 Kremiinsky, J. Ueber die Pachymeningitis interna hemorrhagica bei Menschen und Hunden, *Virchow's Arch f. path Anat* **12**: 321, 1868

12 Ruge, P. Wirkung des Alkohols auf den therischen Organismus, *Virchow's Arch f. path Anat* **49**: 252, 1870

observed grossly hyperemia, ecchymoses and edema of the gastric mucosa of dogs into whose stomachs alcohol had been instilled through a tube. Rabbits receiving alcohol subcutaneously for two weeks showed no mucosal changes. The effects in rabbits of prolonged ingestion of alcohol were studied by Dujardin-Beaumetz and Audigé¹³ in 1879 and by Straus and Blocq¹⁴ in 1887. They described the gross inflammatory changes, erosions, hemorrhages and mucus that appeared in the gastric mucosa. Kayser¹⁵ reported in 1888 the gross anatomic changes in 120 chronic alcoholic addicts who died of delirium tremens, 69 of whom were found to have gross disease of the gastric mucosa.

Afanassijew¹⁶ reported a decided increase in mucus with hyperemia and mucosal hemorrhages in the gastric mucosa of dogs, rabbits, guinea pigs and rats into whose stomachs alcohol had been introduced. One year later, in 1892, Laffitte¹⁷ reported that alcohol could produce various grades of chronic gastritis, from the simple type to chronic ulcerating and atrophic gastritis.

Braun¹⁸ could not confirm the work of Afanassijew in 1899 when he fed alcohol to rabbits and dogs for a considerable period. He observed erosions and hemorrhages, however, in several rabbits which had been fed high concentrations of alcohol.

After the earliest authors, including Fenwick¹⁹ in 1880 and Ewald²⁰ in 1886, had stressed alcohol as among the foremost causes of chronic gastritis, "the injurious effect of alcohol on the gastric mucosa was accepted for many years so completely that the term gastritis almost implied alcoholic etiology."²¹

Faber and Lange⁷ in 1908, by properly fixing the stomach immediately after death, were able to demonstrate by microscopic sections that alcohol may be an exogenous cause of chronic gastritis. They demonstrated atrophic gastritis histologically in the stomachs of persons with chronic alcoholism.

Von Baumgarten²² observed gross hemorrhagic erosions of the gastric mucosa in rabbits, and D'Amato²³ found hyperemia and parenchymatous inflammation in the stomachs of dogs receiving alcohol daily over a period of months.

Stoerk²⁴ developed a complicated theory explaining the effect of alcohol on the gastric mucosa. He expressed the belief that the resorbed alcohol alters the nervous apparatus of the gastric wall, thereby causing abnormal gastric secretion which results in the subsequent inflammation of the stomach.

The first conclusive experimental work on this subject was done in 1925 by Thomsen,⁴ who instilled large

amounts of alcohol into the Pavlov pouch of a dog over a two year period and studied the consequent microscopic changes. He demonstrated the gradual transformation from acute gastritis to chronic atrophic gastritis in the dog's stomach.

Katsch²⁵ one year later contended that in all cases of alcoholism with gastric symptoms there is chronic gastritis if no other disease can be found. He expressed the belief that most cases of chronic gastritis originate with the abuse of alcohol.

In 1929 Konjetzny²⁶ observed that in acute gastritis caused by alcohol the glandular layer of the stomach is inflamed while the superficial layers remain normal. In chronic gastritis, however, both the superficial and the glandular layers are involved in the inflammatory process.

Henning³ observed five years later that high concentrations of alcohol injure the surface epithelium of the stomach and that more dilute solutions injure the parenchyma. From his studies on the resorption of intravital stains from the stomach of the frog he postulated that the gland cells are inflamed because these cells resorb the alcohol after it passes through the crypts. The alcohol then passes from the gland cells through the interstitial tissue and capillary endothelium into the blood stream. Henning, moreover, has presented pathologic evidence that gastritis is frequently associated with alcoholism in man.

Villaret and his associates²⁷ observed gastroscopically chronic atrophic gastritis in chronic alcoholic addicts who had polyneuritis. The number examined was not reported. One patient had erosions, and the stomach was normal in 2.

Evidence began to appear in the early part of the twentieth century indicating that alcohol does not always produce gastritis. At the same time appeared a group of investigators who doubted that chronic alcoholism plays such a prominent part in causing chronic gastritis. Working with rabbits in 1905, Friedenwald²⁸ observed that the stomach was normal in some animals receiving weekly from 40 to 100 cc. of 50 per cent alcohol. A few years later, in 1911, Fahr²⁹ noted that although on gross examination, chronic gastritis was commonly found with chronic addiction to alcohol, the stomach not infrequently was normal. In his excellent report in 1916, Hirsch³⁰ discussed the considerable divergence of opinion that existed concerning the effect of chronic alcoholism on the stomach. In reviewing the work done on this subject experimentally and at autopsy he observed that microscopic studies were made rarely and that gross specimens were difficult to interpret because of the rapid autodigestion of the stomach. In most cases the condition of the stomach had been dismissed with the gross descriptive terms of chronic gastritis without inquiry into the microscopic picture. Hirsch agreed with Quensel,³¹ moreover, that a clear and defi-

13. Dujardin Beaumetz and Audigé. *Recherches expérimentales sur l'alcoolisme chronique*, Compt rend Acad d sc 96: 1557, 1883.

14. Straus, I. and Blocq, P. *Étude expérimentale sur la cirrhose alcoolique au foie*, Arch de physiol norm et path 10: 409, 1887.

15. Kayser, O. *Ein Beitrag zur Alkoholfrage*, Inaug Dissert., Kiel, Schmidt & Klaunig, 1888.

16. Afanassijew, W. A. *Zur Pathologie des acuten und chronischen Alkoholismus*, Beitr z path Anat u z allg Path 9: 349, 1891.

17. Laffitte, S. *Lesions expérimentales gastriques de l'alcoolisme chronique*, Thesis, Paris, 1892.

18. Braun, H. *Ueber die experimentelle durch chronische Alkoholinjection hervorgerufenen Veränderungen in zentralen und peripheren Nervensystem*, Inaug Dissert., Tübingen, F. Pletzker, 1899.

19. Fenwick, S. *On Atrophy of the Stomach and on Nervous Affections of the Digestive Organs*, London, J & A Churchill, 1880, p 204.

20. Ewald, C. A. *Verdauungskrankheiten*, Berlin, August Hirschwald, 1886.

21. Schindler, Rudolf. *Gastroscopy, the Endoscopic Study of Gastric Pathology*, Chicago, University of Chicago Press, 1937, p 187.

22. von Baumgarten. *Ueber die durch Alkohol hervorgerufenen pathologischen histologischen Veränderungen*, Verhandl d deutsch path Gesellsch 11: 229, 1907.

23. D'Amato, L. *Ueber experimentelle vom Magendarmkanal aus hervorgerufenen Veränderungen der Leber und über die dabei gefundenen Veränderungen der übrigen Bauchorgane*, Virchow's Arch f path Anat 187: 435, 1907.

24. Stoerk, G. *Ueber Gastritis chronica*, Wien. Mm. Wechnchr. 44: 555, 1922. *Zur Pathogenese der acuten Gastritis*, ibid 28: 44, 1925.

25. Katsch, G. *Erkrankungen des Magens*. Gastritis, in von Bergmann, G., and Staehelin, R. *Handbuch der inneren Medizin*, Berlin, Julius Springer, 1926, vol 3, p 1, p 554.

26. Konjetzny, G. E. *Die Deckepithelveränderungen der Magenschleimhaut bei akuter Gastritis*, Virchow's Arch f path Anat 275: 816, 1929.

27. Villaret, M. L.; Moutier, F., Justin Besançon, L. and Kloz, H. P. *Caractères spéciaux des troubles gastriques*, Bull et mem Soc med d hôp de Paris 52: 1155, 1936.

28. Friedenwald, J. *The Pathological Effects of Alcohol on Pathology*, J A M A 45: 780 (Sept 9) 1905.

29. Fahr, *Beiträge zur Frage des chronischen Alkoholismus*, Virchow's Arch f path Anat 205: 397, 1911.

30. Hirsch, E. F. *The Gastric Mucosa in Delirium Tremens*, Arch Int Med 17: 354 (March) 1916.

31. Quensel, U. *Alkoholfrågan från medicinsk synpunkt*, Stockh 1913.

nite picture of the effect of alcohol on the stomach was impossible from the experiments described because stronger concentrations of alcohol were given animals than are used by chronic alcoholic addicts.

Hirsch put Zenker's fixing fluid immediately after death into the stomachs of 13 chronic alcoholic addicts, 9 of whom had died of delirium tremens, and studied carefully the microscopic changes of the stomach. He found no evidence of an acute or a chronic inflammatory process. Petechial hemorrhages were the most common lesions and were found in 10 of the 13 addicts. The protocols, however, reveal moderate atrophic gastritis in 3, mucoid degeneration in 2, hyperemia of the stomach in 8 and edema in 3. Hirsch concluded that chronic alcoholism alone is of doubtful etiologic importance in chronic gastritis. It will be shown later how remarkably well our gastroscopic results agree with some of these observations.

Arlitt and Wells³² observed the same year that "the slight effect of alcohol on the stomachs of rats corresponds to the relatively normal condition of the gastric mucosa of human alcoholics observed by Hirsch." They fed rats 0.25 to 2.25 cc. of alcohol daily for periods varying from two to ten months. Crämer³³ maintained in 1921 that alcohol is seldom a cause of gastritis in man.

With the sudden and rapid development of gastroscopy in Germany after 1922, gastroscopic observations on the effect of alcohol on the stomach began to appear, although no concerted study of the subject was reported.

Schindler³⁴ stated in 1923 that alcohol cannot play an important part in chronic gastritis, for this condition had been encountered frequently in patients subjected to gastroscopic examination, relatively few of whom used alcohol at all.

Moutier³⁵ described a mixed gastritis with congestion, cardiospasm and increased mucus in the stomachs of persons addicted to alcohol. Gutzeit³⁶ observed edema, hyperemia and mucus in acute alcoholic gastritis but was uncertain whether prolonged alcoholism produces chronic gastritis. He doubted that most chronic gastritis originates in the abuse of alcohol, as contended by Katsch.²⁵ Beer drinkers, he noted, had normal stomachs. In the absence of nicotine, beer and whisky together did not produce gastritis. He expressed the belief that in heavy smokers who drink beer and whisky or whisky alone severe gastritis develops. Abuse of nicotine, he concluded, is a more important cause of chronic gastritis than alcohol.

It is obvious from these observations and experimental studies that there is considerable difference of opinion concerning the effect of the prolonged use of alcohol on the gastric mucosa. Gross descriptions of the stomach have been highly unreliable because of post-mortem autolysis, and microscopic sections have been made infrequently. Animal experiments have not been conclusive.

The direct visualization of the living gastric mucosa is the most reliable clinical method of diagnosing gastritis. One of us³¹ predicted in 1923 that the diagnosis of chronic inflammation of the stomach would be

the most important function of gastroscopy. Since then gastroscopic examination has been accepted generally as the best clinical method of diagnosing chronic gastritis.

Relatively little work has been done on the effect of alcoholism on the human stomach, and since pathologic studies and animal experiments have yielded conflicting and divergent results it was thought advisable to study this problem by direct gastroscopic observations of the living gastric mucosa.

PATIENTS EXAMINED

One hundred men with chronic alcoholism were examined gastroscopically. Their ages varied from 24 to 66: Twenty-three were under 35, 45 were between 35 and 50, and 32 were between 59 and 66. The duration of the alcoholism ranged from three to fifty-two years, with an average of twenty-one and one-tenth years. Twenty-three men had been drinking for ten years or less, and 77 gave a history of alcoholism of ten to fifty-two years' duration. Several had begun to drink when they were 12 to 14 years of age.

The alcoholic beverages varied widely. "Derail," "moonshine" and "white smoke" were among the most popular beverages consumed. These consist of 94 per cent denatured alcohol diluted with water so that the alcohol content varies between 20 and 90 per cent, depending on the dilution. An oxidized petroleum distillate, among other things, is used to denature the alcohol. Another favorite beverage is made from "Sterno," or "canned heat," which is 94 per cent denatured alcohol gelled with 4 per cent cellulose nitrate. The alcohol is extracted and diluted.

Whisky containing 40 to 45 per cent alcohol is drunk by some, but its price is more or less prohibitive. Wine containing 10 to 15 per cent alcohol and beer are drunk frequently along with the other beverages. Rubbing alcohol containing 70 per cent alcohol denatured with acetone and zinc phenolsulfonate is not infrequently consumed. Some alcoholic addicts drink bay rum, Jamaica ginger, shaving lotion, hair tonic, vanilla extract and shoe polish, the alcohol content of which varies from 10 to 50 per cent. Others insist that they have drunk methyl alcohol, radiator alcohol and horse and mule antiseptics.

The 100 men studied gastroscopically drank from 1 to 6 pints daily (a pint is about half a liter) of the alcoholic beverages mentioned, which contained 20 to 90 per cent alcohol. The average daily consumption was 2½ pints. About half (53) drank 2 to 6 pints daily, and 44 had drunk 1 to 2 pints daily for more than twenty years. Three were beer drinkers, having consumed 3 to 5 gallons (a gallon is almost 4 liters) of beer daily for ten to twenty-five years.

The majority of the subjects were of Irish (45 per cent) and German (22 per cent) descent. The next largest group consisted of Poles (7 per cent), Englishmen (4 per cent), Swedes (4 per cent) and Norwegians (4 per cent). The remaining 14 per cent were distributed among French-Canadians, Bohemians, Dutchmen, Indians, Hungarians, Russians, Italians and Danes. Most had been born in the United States.

The diets were studied in detail and found essentially the same. Fresh fruits and vegetables and milk and butter were appreciably deficient in every instance. The typical diet consisted of bread, small amounts of meat, an occasional egg and large amounts of coffee.

Studies on vitamin C by Dr. A. H. Bryan revealed abnormally low values for this vitamin in the blood.

32. Arlitt, A. H., and Wells, H. G.: The Effect of Alcohol on the Reproductive Tissues, *J. Exper. Med.* 26: 769, 1917.

33. Crämer, cited by Haneborg, A.: The Effect of Alcohol on Digestion in the Stomach, Oslo, Grondahl & Son, 1921.

34. Schindler, Rudolf: Lehrbuch und Atlas der Gastroskopie, Munich, J. F. Lehmann, 1923, p. 85.

35. Moutier, F.: Traité de gastroscopie et de pathologie endoscopique de l'estomac, Paris, Masson & Cie, 1935, p. 154.

36. Gutzeit, K., and Teitge, H.: Die Gastroskopie, Berlin, Urban & Schwartzberg, 1937, p. 158.

A deficiency of vitamin B₁ was found in all but 1 of the 15 cases studied by Dr. J. M. Goldinger. The level of pyruvic acid in the blood was definitely and consistently elevated, but the values were not as high as those found in cases of peripheral neuritis.

TABLE 1.—*Gastroscopic Diagnoses in One Hundred Cases of Chronic Alcoholism*

Diagnosis	Number of Cases
Normal stomach	43
Essentially normal stomach	12
Superficial gastritis	22
(a) Superficial gastritis	9
(b) Superficial hemorrhagic gastritis.	9
(c) Superficial erosive gastritis	2
(d) Superficial hemorrhagic erosive gastritis.	2
Atrophic gastritis	13
(a) Atrophic gastritis	8
(b) Atrophic hemorrhagic gastritis	3
(c) Polyps of the stomach with atrophic gastritis	2
Combined superficial and atrophic gastritis	8
Localized hypertrophic gastritis	1
Hyperplastic nodular gastritis	1

Most of the men smoked the equivalent of fifteen to twenty cigarettes daily. There were several nonsmokers, and a few men smoked thirty to forty cigarettes or their equivalent daily.

Poor dental conditions were observed in practically all the men. Retained roots and fragments of roots, dental caries and pyorrhea alveolaris were seen frequently.

GASTROSCOPIC STUDIES

If one tries to evaluate the condition of the gastric mucosa by direct gastroscopic gross inspection, then the question arises: How accurate are such gastroscopic observations? It could be suspected that definite, diffuse inflammatory changes might be overlooked and that diffuse alterations, as definitely seen during gastroscopic examination, are not a sign of inflammation in the microscopic sense. Comparative studies, undertaken during recent years by one of us (R. S.) and not yet published, on carcinoma-bearing stomachs and on stomachs from which biopsy material could be taken during operative procedures have thrown some light on this question. The results of these studies have been rather astonishing. It has to be admitted that minute inflammatory changes involving chiefly the glandular cells might not be seen in the gastroscopic observation.³⁷ Obviously such minute changes are of no importance to the problem discussed in this paper. Slightly more apparent changes, however, were recognized at gastroscopic examination. These became especially obvious when examination was performed on patients who had had roentgen therapy of the stomach and in whom consequently histamine-proved anacidity had developed. In almost all superficial gastritis was observed.

If, on the other hand, definite superficial gastritis was seen, then a biopsy specimen taken from the involved region of the gastric wall showed inflammation, usually consisting of a cellular infiltration of the uppermost layers of the gastric mucosa and a dense agglomeration of either plasma cells or polymorphonuclear leukocytes. If, furthermore, an area of normal mucosa was observed in a carcinoma-bearing stomach, then microscopic sections taken from this region revealed almost invariably

a perfectly normal gastric mucosa. In cases in which atrophic gastritis was seen gastroscopically the microscopic sections invariably revealed shrinking of the gastric mucosa, lack of glands or transformation of the epithelium into the intestinal type with many goblet cells. Therefore we believe there is definite evidence that gastroscopic observation makes it possible to decide whether inflammation of the mucosa is present.

NORMAL STOMACH

The gastroscopic examination of 100 men who had consumed an average of 2½ pints of alcohol daily for more than twenty-one years revealed that the stomach was entirely normal in 43 cases (tables 1 and 2). The gastric mucosa presented no evidence whatever of inflammation, hemorrhages or erosions, and the soft orange-red, pliable mucosa could not be differentiated in any way from that in a large control series of normal stomachs.

It is interesting to observe that the alcoholic addicts with normal stomachs drank the same amount and quality of alcohol as the group with pathologic conditions of the stomach to be described later. A considerable number of these patients whose gastric mucosa was normal had been drinking 3 to 6 pints of alcohol daily for twenty to forty years, and 8 had delirium tremens. One patient with a normal stomach had drunk 5 to 6 gallons of beer daily for ten years.

ESSENTIALLY NORMAL STOMACH

The stomach was found to be essentially normal in an additional 12 cases, the gastric mucosa being normal except for an occasional small mucosal hemorrhage, a pigment spot lying in a normal mucosa, a single tiny

TABLE 2.—*Analysis of Lesions of the Stomach Seen Gastroscopically in One Hundred Cases of Chronic Alcoholism*

Diagnosis	Number of Cases
1 Normal stomach	43
2 Essentially normal stomach	12
(a) Small patch of mucus on normal mucosa	2
(b) Mucosal hemorrhages in normal mucosa	8
(c) Small erosions in normal stomach.	2
3 Superficial gastritis	20
(a) Mild superficial gastritis	10
(b) Moderately severe	14
(c) Severe	6
4 Atrophic gastritis	21
(a) Mild atrophic gastritis	3
(b) Moderately extensive atrophic gastritis	10
(c) Extensive atrophic gastritis	8
5 Mucosal hemorrhages	22
(a) Essentially normal stomach	8
(b) Superficial hemorrhagic gastritis	9
(c) Superficial hemorrhagic erosive gastritis	2
(d) Atrophic hemorrhagic gastritis	3
6 Erosions	7
(a) Essentially normal stomach	2
(b) Superficial erosive gastritis	3
(c) Superficial hemorrhagic erosive gastritis	2
7 Polyps of the stomach	2
Polyps and extensive atrophic gastritis	2
8 Hypertrophic gastritis	1
9 Hyperplastic nodular gastritis	1

erosion or a small patch of adherent mucus observed on a perfectly normal mucous membrane. The pathologic change was so small and the underlying mucosa and the remaining portion of the stomach so healthy that the stomach was classified as essentially normal. Tiny mucosal hemorrhages or pigment spots occurred in 8, erosions in 2 and adherent mucus in 2 of the 12 cases.

37. Palmer, W. L., and Templeton, F. E.: The Effect of Radiation Therapy on Gastric Secretion. J. A. M. A. 112: 1429 (April 15) 1939.

Thus the gastric mucosa was found normal or essentially normal in 55 of 100 men who had consumed an average of almost 3 pints of alcohol daily for more than twenty years.

SUPERFICIAL GASTRITIS

Superficial gastritis, an inflammation of the stomach characterized by patches of thick, gray, adherent mucus covering an edematous and irregularly colored mucosa, was the most common disease observed in the 45 cases of addiction to alcohol accompanied by gastric disease. It was observed in 30 cases. The gastritis was mild in 10 cases, in which only small patches of mucus were seen, and was more severe in 14, in which larger areas of the gastric mucosa were involved. In 6 cases the gastritis was so severe that the entire mucous membrane appeared to be covered with grayish white, adherent mucus. Large sheets of mucus hanging from the gastric walls covered the mucosa so completely in one case that no mucous membrane whatever was discernible.

Simple superficial gastritis and superficial hemorrhagic gastritis were each observed in 9 cases. Superficial erosive gastritis and superficial hemorrhagic erosive gastritis each occurred in 2 cases, and combined superficial and atrophic gastritis appeared in 8 cases. Antral gastritis appeared infrequently and then only in conjunction with gastritis of the body of the stomach, with which it was seen in 7 cases. In the remaining 23 cases the antrum and the pylorus were normal and the superficial gastritis was confined to the body of the stomach.

ATROPHIC GASTRITIS

The next most common disease of the stomach in chronic alcoholism is atrophic gastritis, which was found in 21 cases. The gastric mucosa in these cases was thin and gray, and networks of purplish blue blood vessels could be seen through the atrophic mucosa. Usually the gastritis became more severe in the uppermost portions of the stomach, but associated antral gastritis was noted in 6 of the 21 cases. A single area of atrophy occurred in only 3 cases, and moderately extensive atrophy involving large areas of the stomach and associated with large, thick, arborizing blood vessels was seen in 10 cases. The stomach was almost completely atrophic in 8 cases, in which huge, protruding, branching blood vessels with severe thinning and graying of the mucosa could be seen easily.

Simple atrophic gastritis was seen in 8 cases and hemorrhagic atrophic gastritis in 3. Polyps were noted with atrophic gastritis in 2 cases, and the atrophic gastritis was combined with superficial gastritis in 8 cases, as mentioned previously. In these, patches of thick gray adherent mucus were observed superimposed on a thin gray mucosa interspersed with arborizing blood vessels. Usually the superficial gastritis was more pronounced in the lower portions of the stomach, and the atrophy appeared more extensively in the upper portions, but in some cases patches of superficial gastritis were distributed extensively throughout the stomach.

MUCOSAL HEMORRHAGES

According to former gastroscopic studies mucosal hemorrhages may be observed in all types of gastritis and sometimes in an apparently normal gastric mucosa.

The relatively high incidence of mucosal hemorrhages in the stomachs of persons with chronic alcoholism is striking. They were found in 22 of the 100 cases studied

and were observed in the "essentially normal" stomach in 8 of the 22 cases. The hemorrhages were small, perhaps 1 to 2 mm. in diameter, and were situated in a normal mucosa unassociated with any other pathologic conditions. The mucosal hemorrhages were usually round and discrete and varied in color from red to dark brown. Not more than two hemorrhages or pigment spots occurred in any of the stomachs.

TABLE 3.—Symptoms of Gastric Disease in Chronic Alcoholism

Diagnosis	Number of Cases	Total
Normal and essentially normal stomach		
(A) No symptoms (excluding morning nausea and vomiting)	51	
(B) Symptoms simulating bowel distress	4	55
Pathologic condition of stomach		
(A) Symptoms		
1. Abdominal distention, epigastric distress and belching		
(a) Superficial gastritis	6	
(b) Superficial hemorrhagic gastritis	2	
(c) Superficial and atrophic gastritis	3	
(d) Atrophic gastritis	3	14
2. Atypical ulcer-like symptoms		
(a) Superficial gastritis	1	
(b) Superficial hemorrhagic gastritis	1	
(c) Atrophic gastritis	2	4
3. Typical peptic ulcer symptoms (past history of duodenal ulcer)		
(a) Superficial gastritis	1	
(b) Superficial hemorrhagic gastritis	1	2
4. Profound weakness		
(a) Atrophic gastritis	4	4
Total	24	24
(B) No symptoms		
1. Superficial gastritis	10	
2. Atrophic gastritis	9	
3. Hypertrophic gastritis	1	
4. Hyperplastic nodular gastritis	1	
Total	21	45

Hemorrhages were observed with other gastric disease in 14 cases: 9 cases of superficial hemorrhagic gastritis, 2 cases of superficial hemorrhagic erosive gastritis and 3 cases of atrophic hemorrhagic gastritis. The stomach in 9 cases of superficial hemorrhagic gastritis presented numerous large red diffuse hemorrhages interspersed with smaller punctate discrete red and brown hemorrhages scattered over a swollen mucosa covered with patches of thick grayish white adherent mucus.

The most spectacular pictures of gastric disease in which hemorrhages occurred were seen in 2 cases of superficial hemorrhagic erosive gastritis. In the first of these cases there were six large red diffuse poorly circumscribed hemorrhages lying in the swollen irregular mucosa of the lesser curvature and the anterior wall of the midportion of the stomach. A large fusiform fold appeared on the anterior wall of the greater curvature. Situated on this fold next to a large reddish brown discrete hemorrhage was seen a definite gray erosion 3 to 4 mm. in diameter surrounded by a red border. This erosion interrupted the continuity of the gastric mucosa and appeared deep. Seven or eight small round discrete hemorrhages appeared in the swollen mucosa of the anterior wall of the greater curvature in the uppermost portion of the stomach. In the second

case was seen a round depressed grayish black erosion 4 to 5 mm. in diameter, surrounded by several round red and reddish brown hemorrhages on the posterior wall of the greater curvature in the midportion of the stomach. Higher up two other erosions were seen surrounded by a red border and by numerous red and brown punctate hemorrhages.

The stomach in the first of the 3 cases of atrophic hemorrhagic gastritis revealed five small round oval and linear discrete red hemorrhages lying in the atrophic mucosa of the lesser curvature and the anterior wall of the midportion. That in the second case had about twenty irregular diffuse red hemorrhages in the network of blood vessels in the thin gray atrophic mucosa of the anterior wall of the lesser and greater curvatures. The stomach in the third case had one reddish brown hemorrhage, 3 mm. in diameter, in the atrophic mucosa of the posterior wall of the greater curvature.

EROSIONS

Erosions of the gastric mucosa have been described in all types of gastritis, although they have been said to be infrequent in chronic atrophic gastritis. Hemorrhagic erosions have been seen, furthermore, in an apparently normal gastric mucosa.

TABLE 4.—Symptoms of Chronic Gastritis

	Number of Patients	Incidence of Symptoms
Normal stomach.....	55	4 (7.3%)
Pathologic condition of stomach.....	45	24 (53.3%)
1. Severity of symptoms		
(a) Mild gastritis..... (12)		4 (33.3%)
(b) Severe gastritis..... (33)		20 (60.6%)
2. Types of gastritis		
(a) Superficial..... (22)	12 (54.5%)	
(b) Atrophic..... (21)	12 (57.1%)	
(c) Hypertrophic..... (1)	0	
(d) Hyperplastic nodular..... (1)	0	

Erosions of the gastric mucosa were seen in 7 cases. Three cases of superficial erosive gastritis were noted. Among the areas of thick whitish gray adherent mucus appeared one or two small depressed grayish erosions disrupting the continuity of the gastric mucosa. They appeared in a swollen, irregular mucosa and were surrounded usually by a red border. The erosions observed in 2 cases of superficial hemorrhagic erosive gastritis have been described. Finally, a small erosion was seen in each of two stomachs which were completely normal otherwise.

OTHER GASTRIC DISEASES

Localized hypertrophic gastritis of the anterior wall of the lesser curvature above the angulus was seen in only 1 case. The mucosa in this area was velvety and distinctly nodular.

Polyps of the stomach occurred in 2 patients, aged 53 and 56. In the former the antrum and the body of the stomach were entirely atrophic, with extensive graying and thinning of the mucosa and with large networks of blood vessels. In the atrophic mucosa was a white round pea-sized polyp between the folds on the posterior wall of the greater curvature. In the latter patient two small pink oval polyps were seen *en face* midway between the anterior and posterior walls on the lesser curvature above the angulus. The polyps were lying in an atrophic mucosa and appeared redder than the surrounding mucous membrane. There was extensive atrophic gas-

tritis of the entire body of the stomach. Benign polyps are not infrequently seen with chronic atrophic gastritis.³⁸

A most unusual form of gastritis was seen in 1 case. A Pole aged 44 who had been drinking 3 to 4 pints of alcoholic beverages daily for twenty-five years had hyperplastic nodular gastritis. The antrum presented an unusual picture. Six soft red pliable nodes varying in size from that of a large pea to that of a marble appeared on the greater curvature and posterior wall of the antrum. Similar large red pliable nodes were seen on the anterior wall of the lesser curvature above the angulus. Segmented folds were observed in the upper portions of the stomach. The rest of the stomach was normal. The gastroscopic picture was similar to that in a case of hyperplastic polyps described by one of us.³⁹

SYMPTOMS OF CHRONIC ALCOHOLIC ADDICTS WITH GASTRITIS

Schindler,³⁰ Benedict,⁴⁰ Schiff⁴¹ and others have described the symptoms associated with chronic gastritis. Although these observers agreed that symptoms may be lacking in some cases, the incidence of definite symptoms in chronic gastritis has not been established.

It should be emphasized that only 4 of the 55 patients with normal or essentially normal stomachs complained of mild abdominal and epigastric distress. In contrast, definite subjective complaints were noted in 24 of the 45 patients with chronic gastritis. Severe or moderately severe gastritis was accompanied by symptoms in 20 of the 33 patients in whom it was found (tables 3 and 4).

Symptoms occurred, then, in 28 of the 100 patients studied. The most frequent complaints, observed in 18 of these 28, were abdominal distention, belching and epigastric discomfort occurring immediately after meals, usually relieved by sodium bicarbonate or alcohol, the latter being more efficacious in most instances. Sharp epigastric pain was infrequent, but gnawing epigastric distress and fullness occurred occasionally. Nocturnal pain was rare, and weakness and anorexia were not complained of. Constipation or diarrhea occurred occasionally. Chronic gastritis was present in 14 of the 18 patients: superficial gastritis in 6, superficial hemorrhagic gastritis in 2, atrophic gastritis in 3 and superficial and atrophic gastritis in 3. The remaining 4 had normal stomachs.

Four patients had pain simulating that caused by ulcer but not typical. They complained of sharp, gnawing or burning midepigastric pain one-half to one hour after meals. Food or sodium bicarbonate relieved the pain in some instances, but in others only alcohol gave relief. Nocturnal pain occurred only occasionally. At gastroscopic examination all 4 were found to have severe gastritis: 1 had moderately severe superficial gastritis, 1 had severe superficial hemorrhagic gastritis and 2 had extensive atrophic gastritis.

Two patients gave the history of a previous duodenal ulcer with melena, hematemesis and verification by roentgenogram. On examination they presented typical symptoms of ulcer. In both the pylorus was drawn posteriorly, presumably by adhesions from an old duodenal ulcer. One had extensive superficial hemor-

38. Schindler, Rudolf, and McGlone, F.: Familial Occurrence of Hyperplastic Gastric Polyps. *Arch. Surg.* 41: 1483 (Dec.) 1940.

39. Schindler, Rudolf: cited by Portis, S. A.: *Diseases of the Digestive System*, Philadelphia, Lea & Febiger, 1941, p. 463.

40. Benedict, E. B.: *Chronic Gastritis*, New England J. Med. 212: 468, 1935.

41. Schiff, L., and Goodman, S.: *Chronic Gastritis: Present Day Status*, Ohio State M. J. 34: 1220, 1938.

rhagic gastritis and the other extensive superficial gastritis. These few observations do not permit any statement concerning the relationship between alcoholism and peptic ulcer.

Four patients complained of profound weakness. Each had extensive atrophic gastritis of the stomach. One complained of extreme weakness with numbness and tingling of the fingers. There was extensive atrophic gastritis of the body and antrum of the stomach. This weakness as a symptom of chronic atrophic gastritis has been described by Schindler and Murphy.⁴²

The morning nausea and vomiting of persons with chronic alcoholism is difficult to explain. It occurs as frequently when the stomach is normal as when it is diseased. The first swallow in the morning produces nausea and vomiting. These symptoms are more likely to occur if water is drunk. After two or three drinks of alcohol the nausea and vomiting disappear, and there is no recurrence until the following morning. These symptoms probably are not related to disease of the stomach.

COMMENT

The stomach was found normal or essentially normal in 55 of 100 men who had drunk large amounts of alcohol over a long period. It is interesting that Kayser¹⁵ found the stomach grossly normal at autopsy in 51 of 120 chronic alcoholic addicts. The high percentage of normal stomachs as seen gastroscopically is in accord, moreover, with the microscopic observation of Hirsch,³⁰ who emphasized the relative infrequency of acute or chronic inflammation in the freshly fixed stomachs of alcoholic addicts who had died of delirium tremens. It agrees, likewise, with the views of Schindler and Gutzeit, who expressed the belief that alcohol is not the foremost etiologic factor in chronic gastritis, as has been thought for so many years by Katsch and others.

It is difficult to understand how the stomach can withstand the assault of 4 to 6 pints of 20 to 90 per cent alcohol daily for twenty to forty years and yet appear perfectly normal. Fifty-five alcoholic addicts drank as much as those with gastritis and yet presented at gastroscopic examination a perfectly normal, soft orange-red, pliable gastric mucosa indistinguishable from that of a normal, healthy 20 year old youth.

The cause of the gastritis observed in 45 of the 100 patients in our series is not clear. We believe that this incidence is much greater than should be expected for subjects chosen at random. Whether the gastric lesions can be ascribed to an individual sensitivity to alcohol or to a deficiency disease is not known. It should be mentioned, however, that a vitamin deficiency was found as frequently in the 55 alcoholic addicts with normal stomachs as in the patients with chronic gastritis. There was no correlation, moreover, between the severity of the gastritis and the duration of the alcoholism or the amount of alcohol drunk.

Superficial gastritis, atrophic gastritis or a combination of both was observed in 43 of the 45 patients who had gastric disease. The combination of superficial with atrophic gastritis has been described frequently, and it is well known that atrophic gastritis may develop from superficial gastritis.

The frequency of hemorrhages (22 per cent) in the gastric mucosa of persons with alcoholism is in close

agreement with the observations of Hirsch, who found hemorrhages in the stomachs of 10 of 13 alcoholic addicts examined at autopsy. The position and appearance of these hemorrhages preclude the possibility of trauma as a factor.⁴³

The study of the symptoms of our patients led to rather striking conclusions. Of the 55 patients having essentially normal stomachs only 4 had some symptoms simulating bowel distress. In contrast to this group, not less than 60 per cent of all patients having severe gastritis complained of definite abdominal distress, either abdominal distention or belching or symptoms typical of ulcer. There has been some skepticism until now as to whether the superficial and atrophic forms of gastritis produce symptoms. Our observations, however, suggest strongly that both types of gastritis, especially the superficial, are able to produce severe abdominal symptoms, although there may be complete absence of symptoms or symptom free intervals.

Although we did not study the gastric secretion of our patients, it is interesting to observe that free acid was present in the secretion of 38 of 63 patients during fasting. Superficial gastritis was found in 16 and atrophic gastritis in 2 of these 38. Of the 25 with no free acid in the secretion during fasting, only 6 had superficial gastritis and 5 atrophic gastritis. The results in the latter group cannot be evaluated because histamine studies were not made.

Why the drinking of alcohol is accompanied by severe and extensive gastritis in some cases and not in others is difficult to understand. The diet was studied in detail as described previously and was found essentially the same for the 55 patients with normal stomachs as for the 45 patients with gastric disease. The same is true of the studies on vitamins C and B₁ for the two groups. Moreover, nonsmokers presented diseased stomachs as frequently as heavy smokers revealed normal stomachs. No correlation was found between the abuse of nicotine and gastric disease. Poor dental conditions appeared so consistently that a distinction between the normal and the diseased stomach on this basis seemed untenable.

Although the prolonged use of alcohol seems to produce chronic gastritis in some patients and has no effect whatever on the stomachs of others, the reason for this discrimination is still unknown.

CONCLUSIONS

1. Gastroscopic examination of 100 men who had consumed an average of 2.8 pints of alcohol daily for more than twenty years revealed that the stomach of 55 per cent was essentially normal.

2. The gastric diseases observed in 45 per cent consisted mainly of superficial gastritis, atrophic gastritis or a combination of the two.

3. Mucosal hemorrhages occurred in 22 per cent.

4. Moderately severe and severe gastritis were accompanied by definite symptoms in 60 per cent, while only 7 per cent of the alcoholic addicts with normal stomachs had gastrointestinal complaints.

5. No correlation was observed between the incidence and severity of the gastritis and the duration of the alcoholism, the amount of alcohol drunk, the abuse of nicotine, dental infection or vitamin deficiency.

42. Schindler, Rudolf, and Murphy, H. M. Symptomatology of Chronic Atrophic Gastritis, *Am. J. Digest. Dis.* 7: 7, 1940

43. Schindler, Rudolf. Chronic Localized Gastric Purpura, *Am. J. Digest. Dis.* 5: 796, 1939

Clinical Notes, Suggestions and New Instruments

EXCESSIVE ABDOMINAL DISTENTION AT HIGH ALTITUDES IN A CASE OF CONGENITAL MEGACOLON (HIRSCHSPRUNG'S DISEASE)

LEON H. COLLINS JR., M.D., PHILADELPHIA

With the rapid increase in air transportation occurring in this country, the effects on certain disease processes of reduced barometric pressure take on growing clinical importance. The levels attained in commercial airline transportation today at times are sufficient to allow of a 50 to 100 per cent expansion of air or gas contained in one of the body cavities.

It has long been recognized that reduced barometric pressure with its attendant reduction in the partial pressure of inspired oxygen affects unfavorably some pathologic states, particularly cardiac and pulmonary diseases. Especially interesting, however, have been those cases in which the expansion of air or gas at a reduced barometric pressure of itself has led to untoward symptoms.

Lovelace and Hinshaw¹ have recently drawn attention to the hazards of air transportation to patients with pneumothorax. They point out that the expansion of the air introduced into the pleural cavity may cause tears of pleural adhesions or of cavity walls near the periphery of the lung.

The expansion of air or gas below the diaphragm also may bring its undesirable effects. When encountered, these symptoms prove to be what might have been expected from the known physical properties of gases. Recently I have had the opportunity of observing a young man with congenital idiopathic dilatation of the colon who, while flying at 14,000 feet, had symptoms explainable on the basis of gas expansion at this reduced barometric pressure. In this report congenital idiopathic dilatation of the colon and Hirschsprung's² disease are considered synonymous.

REPORT OF CASE

A man aged 23, at present a senior in the Dental School of the University of Pennsylvania, is in excellent health. During



Fig. 1.—Congenital megacolon. There is a huge dilatation of the entire colon, more extensive on the left side than on the right.

the first day of his life a well defined dilatation of the colon was observed. This dilatation, however, had not interfered with the delivery. A similar dilatation of the colon is not known to exist in any of his relatives.

Until the age of 3 years adequate movements of the bowel were obtained with the aid of enemas. Since the age of 3, liquid petrolatum (from 15 to 30 cc.) daily plus an occasional enema has been sufficient to maintain evacuation of the bowel. With this prolonged ingestion of

liquid petrolatum clinical symptoms of vitamin A deficiency have never developed. Throughout life his general health has been good. He has engaged freely in competitive athletics without difficulty.

From the Thoracic Section of the Medical Clinic, Hospital of the University of Pennsylvania.

1. Lovelace, W. R. II, and Hinshaw, H. C.: The Hazards of Aerial Transportation to Patients with Pneumothorax, Proc. Staff Meet., Mayo Clin., 1940, 15: 111.
2. Stuhlträgheit Neugeborener in Folge von Atresie des Colons, Jahrb. f. Kinderh. 27: 1, 1828.

He has a well balanced diet. He can eat almost anything without difficulty with the exception of vinegar and fried foods. He has noted that no particular food seems to produce more gas than others. Each evening about a half an hour after his dinner he lies down on his left side for a few moments. He then passes by rectum the gas that has accumulated in his colon. By this simple daily routine his abdomen remains comfortable.

He is well developed, is 6 feet, 2 inches (188 cm.) tall and weighs 155 pounds (70.3 Kg.). His usual temperature is 98 F., pulse rate 68 and blood pressure 110 systolic and 70 diastolic. On examination there was a moderate distention of his entire abdomen, both in the erect and in the recumbent posture. Masses or viscera were not palpable. There were no areas



Fig. 2.—Congenital megacolon, showing an extensive elevation of the left dome of the diaphragm and displacement of the cardiac shadow to the right side.

of tenderness. The percussion note over the entire abdomen was tympanitic. The rectal sphincters were normal.

Laboratory studies including a complete blood count, examination of the urine, fractional gastric analysis, a blood Wassermann test and a vital capacity test were negative. The standard as well as the limb leads of the electrocardiogram were normal. Roentgen examination of the gastrointestinal tract (fig. 1) showed a huge dilatation of the entire colon as well as of the sigmoid and rectum. Roentgen examination of the chest (fig. 2) showed considerable elevation of the left dome of the diaphragm and displacement of the cardiac shadow to the right side.

He had flown on many occasions but never higher than from 3,000 to 4,000 feet. A few months ago, however, he was a passenger on a regularly scheduled commercial flight between Chicago and New York. Because of bad weather between Chicago and Cleveland it was necessary to fly at altitudes higher than customary. At 10,000 feet he began to notice that his abdomen was swelling perceptibly. This swelling increased steadily until at 14,000 feet his abdomen looked like that of a "pregnant woman." Also he was dyspneic and complained of precordial pain. There was no cyanosis, dizziness or nausea.

His curiosity being aroused, he was anxious to see whether the foregoing symptoms would disappear without deflation by rectum when the plane made its scheduled landing at Cleveland. The symptoms did disappear as the plane was descending to land at Cleveland. Because of bad weather when crossing the Alleghenies, the plane eventually again ascended to 14,000 feet. At this time the patient again complained of considerable abdominal distention, dyspnea and precordial pain. He succeeded in deflating himself and was symptom free from then on into New York.

COMMENT

According to Behnke,³ most of the gas in the colon is nitrogen residual from swallowed air. Like any other gas, this conforms to Boyle's law and its volume increases inversely as the absolute pressure, the temperature remaining constant. The expansion in colonic gas that took place in this instance is considered adequate to explain the symptoms experienced at an altitude of 14,000 feet. At that level the gas volume is about one and nine-tenths times that at sea level.

3. Behnke, A. R.: Proceedings, Post Graduate Course in Aviation Ophthalmology and Aviation Medicine, Washington, D. C., The George Washington University School of Medicine, 1940, p. 206.

As air transportation becomes a more common mode of travel it is reasonable to suspect that more clinical conditions⁴ will be reported which either temporarily or permanently are adversely affected by the reduced barometric pressure. Congenital idiopathic dilatation of the colon should be included in this group.

CONCLUSION

A patient with congenital idiopathic dilatation of the colon (Hirschsprung's disease) while flying at 14,000 feet experienced considerable abdominal distention, dyspnea and precordial pain. These symptoms were relieved (1) when the plane descended to normal barometric levels for a landing and (2) when the patient deflated himself while the plane was still in flight.

133 South Thirty-Sixth Street.

MULTIPLE CASES OF TONSILLECTOMY AND
POLIOMYELITIS

CARL E. KRILL, M.D., AKRON, OHIO

AND

JOHN A. TOOMEY, M.D., CLEVELAND

The presence of poliomyelitis in epidemic form in various parts of the United States during this summer and fall, the obvious increase in the incidence of the bulbar type of the disease and the suspected association between tonsillectomies and bulbar types of paralysis make the present preliminary report of general interest.

Five of six children, aged 11, 9, 8, 7 and 6 years, had a tonsillectomy and adenoidectomy on August 22. The operations were done under general anesthesia and under the strictest of aseptic precautions in a clinic, and the children went home the same day in good condition. Three of the children began to show symptoms of poliomyelitis on September 3. One child probably started to have symptoms on the 3d and another on the 5th of September. All the symptoms were referred to the gastrointestinal tract—anorexia, nausea and vomiting. Dysarthria and dysphagia developed in 3 of the children on September 6 and in 2 the next day, so that by September 7 all 5 had bulbar poliomyelitis. In 2 there was involvement of the right seventh nerve and in 1 of the left. In 3 there was palatine paralysis. In 1 child there was a lower motor neuron lesion involving muscles of the arms and legs, paralysis being more marked in the upper arms. One child died at 6:30 a. m. and one at 3:30 p. m. on September 8; a third died at 11:30 a. m. on September 9. One child appears as though he should get better, but the other is still seriously ill.

The parents and the child of the family who was not operated on, who is the youngest of the children and 2½ years of age, have had no symptoms of the disease.

Since the operations were performed under most sterile conditions and surroundings, it is unlikely that the disease was introduced at that time. This leaves two possibilities: (1) Poliomyelitis virus may have been present in the throats of these children at the time of the operation or (2) the virus was introduced after the operation. The time interval between the operations and the onset of symptoms—twelve days—makes one suspect that the virus was not present in the throats when the tonsils and adenoids were removed and that it probably was introduced later. Whether or not the virus is present in the stools of the child and the parents who are asymptomatic remains to be ascertained by further study.

There have been no cases of poliomyelitis in the neighborhood where this family lives. The only possible epidemiologic connection lies in the fact that from August 28 to September 2 the stricken children played with two other children who had been visiting some neighbors. The visiting children lived directly across the street from a patient who had died of bulbar poliomyelitis in Cleveland City Hospital on Aug. 4, 1941.

4. Lovelace, W. R., II: Transportation of Patients by Airplane. Proc. Staff Meet., Mayo Clin. 16:221 (April 2) 1941.

Sponsored by the National Foundation for Infantile Paralysis, Inc. From the Children's Hospital, Akron, Ohio, the Division of Contagious Diseases, City Hospital, and the Department of Pediatrics, Western Reserve University School of Medicine, Cleveland.

Special Article

GLANDULAR PHYSIOLOGY AND
THERAPYINTERNAL SECRETIONS OF THE
GASTROINTESTINAL TRACT

ANDREW C. IVY, PH.D., M.D.

CHICAGO

This special article is published under the auspices of the Council on Pharmacy and Chemistry. It is one of a series which will be published in book form as the second edition of "Glandular Physiology and Therapy." The opinions expressed in this article are those of the author and do not necessarily represent the views of the Council.—Ed.

GASTRIC SECRETION—GASTRIN

The secretory response of the gastric glands to a meal is due in part at least to a humoral mechanism. This has been amply demonstrated by means of transplanted pouches of the stomach.¹ Just what proportion of the total secretory response is mediated humorally is difficult to determine. There is still no direct evidence to indicate what area or areas of the gastrointestinal tract are the site of action for the stimuli which give rise to the humoral phase. It has recently been shown,² contrary to earlier views, that the fundus is sensitive to chemical stimuli, although less so than the pyloric region. Whether a humoral mechanism is elicited from either area is not known.

The weak point in the gastrin theory has been the difficulty in demonstrating that the humoral secretion is due to a hormone rather than to the absorption of secretagogues or to vascular or circulatory changes. This demonstration is particularly important in the case of gastrin, since most gastric secretagogues are active on parenteral administration. Several types of evidence have been advanced in favor of the hormone theory. For example, histamine-free liver extracts perfused through the lumen of a pouch of the entire stomach will elicit gastric secretion, in doses much smaller than are required to produce a response on parenteral injection.³ During the period of perfusion the extract is not appreciably absorbed. Although this evidence is suggestive of a hormone mechanism, it is not conclusive. It has never been shown specifically that agents acting solely in the stomach give rise to a humorally mediated secretion; local intrinsic reflexes may be involved, as suggested by the earlier observation that cocainization of the gastric mucosa renders it insensitive to chemical stimuli;⁴ local vascular or circulatory changes have not been eliminated.

It has been shown that the feeding of broken bones or of pieces of rubber to dogs will produce pathologic

From the Department of Physiology and Pharmacology, Northwestern University Medical School.

1. Ivy, A. C., and Farrell, J. I.: Contributions to the Physiology of Gastric Secretion. VIII. The Proof of a Humoral Mechanism, *Am. J. Physiol.* 74: 639 (Nov.) 1925. Lim, R. K. S.; Loo, C. T., and Liu, A. C.: Observations on the Secretion of the Trans-planted Stomach, *Chinese J. Physiol.* 1: 51 (Jan.) 1927. Klein, E.: Gastric Secretion 11. Studies in a Transplanted Pouch Without Auerbach's Plexus, *Arch. Surg.* 25: 442 (Sept.) 1932.

2. Kim, M. S.: Effect of Secretagogues on Gastric Secretion. Role of the Pylorus in Gastric Secretion. *Mitt. a. d. med. Akad. zu Kyoto* 12: 1015, 1934. Wilhelm, C. M.; O'Brien, F. T., and Hill, F. C.: The Influence of the Pylorus on the Secretion of Acid by the Fundus, *Am. J. Physiol.* 116: 685 (Aug.) 1936.

3. Kim, M. S., and Ivy, A. C.: On the Mode of Action of Secretagogues (Liver Extract) in Promoting Gastric Secretion, *Am. J. Physiol.* 105: 220 (July) 1933.

4. Sawitch, V. V.: The Mechanism of the Second Phase of Gastric Secretion, *Russ. J. Physiol.* 4: 155, 1922; abstracted, *Physiol. Abstr.* 7: 431, 1922.

hypersecretion eighteen hours later in dogs with completely denervated pouches.⁵ Since the bones or rubber could not act by being absorbed, it has been suggested that they elicit a hormone response. However, the bones were fed with a meal, so that delayed gastric evacuation or obstruction may have permitted the absorption of secretagogues for many hours; since the pouches used retained their original vascular supply, circulatory changes are not ruled out.

The third type of evidence which has been used to support the hormone theory is that extracts of pyloric mucosa may be prepared which stimulate gastric secretion on parenteral injection. The active constituent of such extracts has been shown to be histamine, which has been isolated in the form of the crystalline picrate.⁶ Careful assays of the histamine content of pyloric and fundic mucosa have revealed that the fundus contains the largest share of histamine as well as of gastric excitant,⁷ yet, as previously mentioned, it is not the area most sensitive to chemical stimuli. The fact is now well known that histamine may be extracted from practically all tissues of the body, so that this evidence is not conclusive in favor of the theory that histamine is gastrin. Attempts to show that the histamine titer of the blood rises during digestion of a meal have been unsuccessful,⁸ but this is not unexpected, since the quantity of histamine required to stimulate gastric secretion would be so diluted by the body fluids as to become unmeasurable. Furthermore, if it is maintained that histamine is the gastric hormone, one must conclude that atropine prevents the formation of this hormone, since investigators have repeatedly shown that atropine can abolish the gastric secretory response to a meal but not that to histamine.⁹

Recently it has been claimed that pyloric extracts free of histamine stimulate gastric secretion and that the action of such extracts is not affected by atropine.¹⁰ Attempts to confirm this report in my laboratory and elsewhere have been unsuccessful.

PANCREATIC SECRETION—SECRETIN

Bayliss and Starling demonstrated clearly that pancreatic secretion is regulated by a hormone mechanism. This demonstration consisted in showing that a specific substance, hydrochloric acid, when introduced into a specific region of the digestive tract, the small intestine, stimulates the flow of pancreatic juice, that this action occurs independently of the nervous system and that the humoral agent is not absorbed hydrochloric acid but a specific substance which they were able to extract from the intestinal mucosa.¹¹ This substance was given the name "secretin." Since this time the humoral mechanism for pancreatic secretion has been conclusively demonstrated by the use of dogs with transplanted pancreas and transplanted intestinal loops.¹²

It is well known that many substances besides hydrochloric acid, including fats and the products of protein digestion, are capable of stimulating pancreatic secretion when admitted to the duodenum. It has been shown that they do not act by being absorbed from the intestine.¹³

A large number of investigators have prepared potent secretin, and within recent years two laboratories have obtained this substance in crystalline form.¹⁴ However, its chemical structure has not yet been elucidated.

In addition to being a stimulant to the flow of pancreatic juice, secretin has been shown to be a true cholagogue, although the biliary response is considerably less than the pancreatic.¹⁵ It is interesting in this regard that secretin is reported to stimulate the primitive hepatopancreas of the octopus.¹⁶ Crystalline secretin has also been reported to stimulate the flow of intestinal juices.¹⁷ Secretin, which is active on intravenous administration, produces little or no action when administered in any other way.

Within the last few years, a number of reports have been concerned with the use of secretin as a clinical test for pancreatic function.¹⁸ In some of these investigations a commercial product which has recently become available has been employed. These investigations reveal that secretin produces the same effects in man as it does in animals; the volume of pancreatic juice and the concentration and output of bicarbonate are augmented, the outputs of the various enzymes are increased, although their concentrations are diminished, and the secretion of bile is promoted. The latter is not reflected in the duodenal drainage unless the gallbladder is incompetent or absent, or the sphincter of Oddi is relaxed. Attempts have been made to establish normal values for the test, and it is claimed that the procedure is a valuable aid in the diagnosis of pancreatic disease.

GALLBLADDER EVACUATION—CHOLECYSTOKININ

The ingestion of a meal has been repeatedly observed to cause the gallbladder to contract and evacuate.¹⁹ Most effective in this regard are fatty substances and acids acting from the small intestine. The evacuation of the gallbladder is not appreciably affected by denervation, nor does electrical stimulation of the nerves of the organ produce more than slight and temporary effects in most animals. Further evidence for a humoral mechanism has been provided by cross circulation experiments in which the presence of hydrochloric acid in the duodenum of a donor dog causes evacuation of

13 Gray, J. S., Kim, M. S., and Ivy, A. C. Is a Portion of the Pancreatic Secretory Response to a Meal Due to the Absorption of Digested Food Products? *Am. J. Physiol.* **116**: 210 (June) 1936.

14 Hammarsten, E., Jörpes, E., and Ågren, G. Versuche zur Reinigung von Secretin. *Biochem. Ztschr.* **261**: 272, 1933. Green, H., and Ivy, A. C. The Isolation of Secretin. *Am. J. Physiol.* **124**: 427 (Nov.) 1938.

15 Tanturi, C. A., Ivy, A. C., and Greengard, H. Secretin Is a True Cholagogue. *Am. J. Physiol.* **120**: 336 (Oct.) 1937. La Barre, J., and Goffin, R. A. Propos de l'hypersecretion biliaire consecutive a l'administration de secretine ou a l'injection intraduodenale de l'acide chlorhydrique dilue. *Arch. internat. de physiol.* **44**: 444, 1937.

16 Ledrüt, J., and Ungar, G. Action de la secretine chez l'octopus vulgaris. *Arch. internat. de physiol.* **44**: 205, 1936.

17 Ågren, G. Ueber die pharmakodynamischen Wirkungen und chemische Eigenschaften des Secretins. *Skandin. Arch. f. Physiol.* **70**: 10, 1934.

18 Chiray, M., and Bolger, M. Le diagnostic des affections pancréatiques par l'épreuve à la secretine purifiée. *Presse med.* **41**: 423 (March 14) 1936. Voegtlin, W. L., Greengard, H., and Ivy, A. C. The Response of the Canine and Human Pancreas to Secretin. *Am. J. Physiol.* **110**: 193 (Nov.) 1934. Lagerlöf, H. The Secretin Test of Pancreatic Function. *Quart. J. Med.* **8**: 115 (April) 1939. Diamond, J. S.; Siegel, S. A.; Gall, M. B., and Krusen, S. The Use of Secretin in a Clinical Test of Pancreatic Function. *Am. J. Digest. Dis.* **6**: 366 (Aug.) 1939.

19 Ivy, A. C. The Physiology of the Gall Bladder. *Physiol. Rev.* **11**: 1 (Jan.) 1934.

5 Lim, R. K. S., Hou, H. C.; Chang, H. C., and Feng, T. P. The Basal Secretion of the Stomach II. The Influence of Feeding Bone and Other Hard Objects. *Chinese J. Physiol.* **4**: 1 (Feb.) 1930.

6 Sacks, J.; Ivy, A. C.; Burgess, J. P., and Vandolah, J. E. Histamine as a Hormone for Gastric Secretion. *Am. J. Physiol.* **101**: 331 (July) 1932.

7 Gavin, G.; McHenry, E. W., and Wilson, M. J. Histamine in Canine Gastric Tissues. *J. Physiol.* **79**: 234 (Sept.) 1933.

8 MacIntosh, F. C. Histamine as Normal Stimulant of Gastric Secretion. *Quart. J. Exper. Physiol.* **28**: 87 (June) 1938.

9 Gray, J. S. The Effect of Atropine on Gastric Secretion and Its Relation to the Gastrin Theory. *Am. J. Physiol.* **120**: 657 (Dec.) 1937.

10 Komarov, S. A. Gastrin. *Proc. Soc. Exper. Biol. & Med.* **38**: 514 (Nov.) 1938; Further Studies on Gastrin. *Am. J. Physiol.* **126**: 559 (July) 1939.

11 Bayliss, W. M., and Starling, E. H. The Mechanism of Pancreatic Secretion. *J. Physiol.* **28**: 325 (Sep.) 1902.

12 Ivy, A. C.; Farrell, J. I., and Leeth, H. C. Contributions to the Physiology of the Pancreas. III. A Hormone for External Pancreatic Secretion. *Am. J. Physiol.* **52**: 27 (Sept.) 1927.

the gallbladder in a recipient dog.²⁰ Furthermore, a gallbladder transplanted into the neck of a dog will respond to the presence of acid in the duodenum.²¹ Blood transfusion experiments, though equivocal, indicate the humoral nature of gallbladder evacuation in man.²² It has been repeatedly shown that the humoral agent is not fat or other substances which might be absorbed from the intestine.²³ The implication that a hormone is involved has been substantiated by the successful preparation of intestinal extracts which activate the gallbladder in man as well as in experimental animals.²⁴ The hormone has been given the name "cholecystokinin." The evidence indicates that this hormonal mechanism is the chief stimulus for evacuation of the gallbladder.

Cholecystokinin, which has been separated from secretin, has not yet been obtained in pure crystalline form, nor has it been rendered available for clinical investigation. It is not active on oral or rectal administration.²⁵ The available evidence suggests that it relaxes the sphincter of Oddi.²⁶ The tone and degree of distention of the gallbladder have been shown to be important factors in determining the response of the organ to cholecystokinin.²⁷

GASTRIC INHIBITION—ENTEROGASTRONE

That the ingestion of neutral fat inhibits gastric secretion and motility has been known since the last century. It has been repeatedly confirmed that this effect is elicited from the small intestine and not from the stomach.²⁸ Experiments with transplanted pouches of the stomach have shown that the inhibition is humoral in nature.²⁹ The possibility that absorbed products of digestion constitute the humoral agent has been excluded.³⁰ The substance concerned, which can be prepared from intestinal mucosa, has been shown to inhibit gastric motility of both the fasting and the digestive type and to inhibit gastric secretion stimulated by a meal, sham feeding or the injection of insulin or

histamine.³¹ The active principle of these extracts has been given the name "enterogastrone." This principle has not yet been obtained in pure crystalline form.

Recently several independent laboratories have reported that urine contains a gastric inhibitory substance.³² This principle has been demonstrated in the urine of normal men and women, pregnant women, patients with various gastric disorders and normal, duodenectomized or gastrectomized dogs. The earlier extracts contained toxic impurities (pyrogenic substances) which exerted an inhibitory action on gastric secretion, but potent preparations free of these contaminants have now been obtained.³³ Such extracts have been shown to inhibit the secretory response of the human stomach to histamine.³⁴ Since the gastric inhibitory principle of urine has been differentiated from a number of other suspected substances, it has been given the name "urogastrone." That it may possibly represent excreted enterogastrone is suggested by the finding that it is excreted in increased quantities in the urine of fat-fed dogs and is absent from the urine of dogs from which the entire small intestine has been removed.³⁵ The gastric inhibitory principles, enterogastrone and urogastrone, probably offer greater therapeutic possibilities than the other gastrointestinal hormones.

INTESTINAL SECRETIONS—ENTEROCRININ

As long ago as 1902 it was shown that Brunner's glands in an isolated segment of duodenum will respond slightly to the ingestion of certain types of food, although locally acting stimuli are probably more effective.³⁶ More recently it has been reported that goats, pigs, cats and dogs with isolated duodenal segments exhibit in these segments an increase in the rate of secretion from Brunner's glands in response to feeding.³⁷ This has been confirmed in the case of the dog.³⁸ It was later claimed that this response to feeding could be obtained after cutting the vagi and splanchnic nerves and could be obtained from transplanted duodenal loops.³⁹ It has not been shown that the humoral agent is not some absorbed product of digestion. In support of the view that a hormone is concerned are the reports that impure preparations of secretin stimulate the secretion of Brunner's glands.⁴⁰ It has not been possible

20 Ivy, A. C. and Oldberg, E. A Hormone Mechanism for Gall Bladder Contraction and Evacuation, *Am J Physiol* 86:599 (Oct) 1928

21 Houssay, B. A., and Rubio, H. H. L'hormone duodeno-cholecystique, *Compt rend Soc de biol* 111:455 (Sept) 1932

22 Sandblom, P. The Function of the Human Gall Bladder Studied in Connection with Blood Transfusion and After Stomach Operations, *Acta radiol* 14:249, 1933 Bettman, R. B., and Tannenbaum, W. J. Gall Bladder Contraction After Blood Transfusion, *J A M A* 106:1376 (April 18) 1936

23 Higgins, G. M., and Wilhelm, C. M. The Effect of Intravenous Injection of Various Emulsions of Fat on the Emptying of the Gall Bladder, *Am J M Sc* 178:805 (Dec) 1929 Voegtlin, W. L., McEwen, E. G., and Ivy, A. C. On the Humoral Agents Concerned in the Causation of Gall Bladder Contraction, *Am J Physiol* 103:121 (Jan) 1933

24 Ivy, A. C., Kloster, G.; Lueth, H. C., and Drewyer, G. E. On the Preparation of "Cholecystokinin," *Am J Physiol* 91:336 (Dec) 1929 Agren, G. On the Preparation of Cholecystokinin, *Skandinav Arch f Physiol* 81:234, 1939 Ivy, A. C., Drewyer, G. E., and Orndorff, B. H. The Effect of Cholecystokinin on the Human Gall Bladder, *Endocrinology* 14:343 (Sept) 1930

25 Doublet, H., and Ivy, A. C. Absorption of Cholecystokinin and Secretin from the Colon and Rectum, *Proc Soc Exper Biol & Med* 39:129 (Oct) 1938

26 Sandblom, P., Voegtlin, W. L., and Ivy, A. C. The Effect of Cholecystokinin on the Cholechooduodenal Mechanism (Sphincter of Oddi), *Am J Physiol* 113:175 (Sept) 1935

27 Doublet, H., and Ivy, A. C. The Response of the Smooth Muscle of the Gall Bladder at Various Intravascular Pressures to Cholecystokinin, *Am J Physiol* 124:379 (Nov) 1938

28 (a) Sokolov, A. Zur Analyse der Abscheidungsarbeit des Magens bei Hunden, Jahresr. d. Fortsch. d. Tierchem 34:469, 1905 (b) Lonnqvist, B. Beitrage zur Kenntnis der Magenstoffabsonderung, *Skandinav Arch f Physiol* 18:194, 1906 (c) Waugh, J. M. Effect of Fat Introduced into the Jejunum by Fistula on Motility and Emptying Time of the Stomach, *Arch Int Med* 33:451 (Sept) 1936 (d) Quigley, J. P., Zettleman, H. J., and Ivy, A. C. Analysis of the Factors Involved in Gastric Motor Inhibition by Fats, *Am J Physiol* 108:643 (June) 1934

29 (a) Farrell, J. I., and Ivy, A. C. Studies on the Motility of the Transplanted Gastric Pouch, *Am J Physiol* 76:227 (March) 1926 (b) Feng, T. P., Hou, H. C., and Lim, R. K. S. Mechanism of Inhibition of Gastric Secretin by Fat, *Chinese J. Physiol* 3:371 (Oct) 1929 Quigley, J. P., Zettleman, H. J., and Ivy, A. C.

30 Kosaki, T., and Lim, R. K. S. Mechanism of Inhibition of Gastric Secretion by Fat. Role of Bile and Cystokinin, *Chinese J Physiol* 4:213 (May) 1930 Quigley, J. P., Zettleman, H. J., and Feng, T. P.

31 Lim, R. K. S. Observations on Mechanism of Inhibition of Gastric Function by Fat, *Quart J Exper. Physiol* 23:263 (Aug) 1933 Gray, J. S., Bradley, W. B., and Ivy, A. C. On the Preparation and Biological Assay of Enterogastrone, *Am J Physiol* 118:463 (March) 1937

32 Necheles, H.; Hanke, M. E., and Fautl, E. Preparation and Assay of Inhibitor of Gastric Secretion and Motility from Normal Human Urine, *Proc Soc Exper Biol & Med* 42:618 (Nov) 1939 Friedman, M. H. F., Recknagel, R. O.; Sandweiss, D. J., and Patterson, T. L. Inhibitory Effect of Urine Extracts on Gastric Secretion, *ibid.* 41:509 (June) 1939 Friedman, M. H. F.; Sandweiss, D. J.; Recknagel, R. O., and Patterson, T. L. Effects of Extracts of Urine from Pernicious Anemia and Gastric Cancer Patients on Gastric Secretion, *Anat. Rec.* 75 (supp): 53 (Dec) 1939 Friedman, M. H. F.; Saltstein, N. C., and Forlman, A. Effect of Urine from Gastrectomized and Duodenectomized Dogs on Gastric Secretion, *Proc Soc Exper. Biol & Med* 43:181 (Jan) 1940 Culmer, C. U.; Atkinson, A. J., and Ivy, A. C. Depression of Gastric Secretion by Anterior Pituitary like Fraction of Pregnancy Urine, *Endocrinology* 24:631 (May) 1939 Gray, J. S.; Wiczorowski, E., and Ivy, A. C. Inhibition of Gastric Secretion by Extracts of Normal Male Urine, *Science* 89:489 (May 26) 1939

33 Gray, J. S., Culmer, C. U.; Wiczorowski, E., and Adkison, J. L. Preparation of Pyrogen Free Urogastrone, *Proc. Soc. Exper. Biol & Med* 43:225 (Feb) 1940

34 Wiczorowski, E.; Gray, J. S., and Ivy, A. C. The Effect of Urogastrone on Gastric Secretion in Man, *Am J. Physiol* 129:496, 1940

35 Culmer, C. U., Gray, J. S.; Adkison, J. L., and Ivy, A. C. On the Origin of Urogastrone, *Science* 91:148 (Feb 9) 1940

36 Ponomarev, cited by Balkin

37 Florey, H. W., and Harding, H. E. Further Observations on the Secretion of Brunner's Glands, *J. Path. & Bact* 39:255 (Sept.) 1934

38 Fogelson, S. J., and Bachrach, W. H. Response of Brunner's Glands to Secretin, *Am J. Physiol* 128:121 (Dec) 1939

39 Florey, H. W., and Harding, H. E. A Humoral Control of Secretion of Brunner's Glands, *Proc. Roy. Soc. London, s B* 117:68 (Feb) 1935 Wright, R. D., Jennings, M. A., Florey, H. W., and Lums, R.: The Influence of Nerves and Drugs on Secretion by the Small Intestine, *Quart J Exper Physiol* 30:73 (Jan) 1940

40 Florey, H. W., and Harding, H. E. The Nature of the Hormone Controlling Brunner's Glands, *Quart J Exper Physiol* 25:329 (Dec.) 1935 Fogelson and Bachrach

to establish that the accompanying increase of duodenal motility does not force out accumulated secretions from the duodenal loop.³⁸

In the case of jejunal and ileal loops of intestine, which secrete succus entericus, the evidence is not so clear. Both chemical and mechanical stimuli are effective when applied directly to the loop. If the loop is spared all mechanical influences, usually no secretion results whether the animal is fasted or is fed. A rubber collecting tube in the lumen is sufficient to evoke continuous secretions, which, however, is scarcely affected by feeding the animal.⁴¹ If local stimuli produce an obvious response and distant stimuli only a scarcely perceptible one, it is difficult to escape the conclusion that the latter are of relatively little physiologic significance.

Recently the secretion of succus entericus has been studied in greater detail.⁴² In these experiments intestinal loops were transplanted beneath the skin. Following this the secretory response to a meal was studied before and after complete denervation, accomplished by severing the pedicle. The succus entericus was collected by means of a rubber tube in the lumen of the fistula. In a large series of experiments it was found that neither the volume nor the output of enzymes was augmented by feeding before denervation. Following denervation a 60 per cent increase in the volume of juice was observed in response to a meal, and a questionable enzyme response was obtained. A later study⁴³ of a similar nature showed a more clear-cut increase in the production of enzymes in the denervated fistula. These results have been interpreted to indicate that the secretory response of the intestine is augmented by removing the influence of inhibitory nerves and that a humoral mechanism is involved. Attempts by earlier workers to detect a response of the denervated or transplanted intestinal loop to feeding were unsuccessful.⁴⁴

That the possible humoral agent may be absorbed products of digestion is suggested by the finding that peptones are active on parenteral and on oral administration.⁴⁵ On the other hand, evidence that a hormone is concerned has been obtained by preparing extracts of intestinal mucosa which stimulate the flow of succus entericus.⁴⁶ The active principle of these extracts, which has been given the name "enterocrinin," has been shown to be distinguishable from vasodilator substances, secretin and enterogastone.

INTESTINAL VILLI—VILLIKININ

It has been reported that the ingestion of a meal greatly augments the movements of the intestinal villi. The early investigations emphasized the importance of local chemical and mechanical stimuli for evoking these movements, since the movements occurred only in intestinal segments to which chyme had descended.⁴⁷ However, a humoral mechanism was proposed as a result of the discovery that the introduction of hydrochloric acid into the duodenum would activate the movements

of the villi of a jejunal segment which had been removed from the abdominal cavity and viviperfused by anastomosis with the external jugular vein and the carotid artery.⁴⁸ This was subsequently repeated successfully in experiments with cross circulation between two dogs.⁴⁹ An indication that the humoral agent is a hormone was provided by the claim that crude preparations of secretin on parenteral injection stimulated movements of the villi.⁵⁰ The active principle, which was shown to be distinguishable from histamine, choline, adenosine, secretin and cholecystokinin, has been given the name "villikin." Evidence for the physiologic significance of villikin consists in the report that augmentation of the movements of the villi promotes intestinal absorption and that this action can be demonstrated in cross circulation experiments.⁵²

None of the work on villikin has as yet been confirmed. It has been reported that the introduction of hydrochloric acid into the duodenum failed to promote the absorption of dextrose from isolated intestinal loops in unanesthetized dogs.⁵³

CARBOHYDRATE METABOLISM—DUODENIN— ISLET-STIMULATING HORMONE

During the past ten years or more there has accumulated a rather extensive literature in which claims are made that extracts of intestinal mucosa on parenteral or oral administration will lower the fasting blood sugar level of normal or of depancreatized dogs and of rabbits and will reduce the dextrose tolerance curve. These claims have been widely held to indicate the existence of a duodenal hormone which regulates the blood sugar level. It has also been claimed that the introduction of hydrochloric acid into the duodenum will likewise lower the fasting blood sugar level, although some investigators have maintained that this can be demonstrated only in the absence of the adrenal glands.⁵⁴

Little effort has been made to establish the necessary requirement that the effect of the acid is mediated humorally or to provide evidence that the phenomenon would operate in normal animals as the result of the entrance of food into the intestine. With the intention of providing these essential links in the chain of evidence for the proposed hormone, attempts were first made to repeat the original experiments. It was found, however, that the presence of hydrochloric acid in the duodenum failed to lower the fasting blood sugar level of normal anesthetized or unanesthetized dogs or dogs with ligated adrenal glands.⁵⁵ Negative results were also obtained in attempts to improve intravenous dextrose tolerance or to reduce the hyperglycemic response to the absorption of dextrose, to the injection of epinephrine or to removal of the pancreas.⁵³ Finally, extracts of intestinal mucosa were prepared by a variety of methods which have been reported to yield the hypoglycemic substance, but none lowered the fasting blood

41. Babkin, B. P.: Die aussere Sekretion der Verdauungsdrusen, Berlin, Julius Springer, 1928.

42. Nasset, E. S.; Pierce, H. B., and Murlin, J. R.: Proof of a Humoral Control of Intestinal Secretion, *Am. J. Physiol.* **111**:145 (Feb.) 1935.

43. Schiffirin, M. J., and Nasset, E. S.: The Response of the Jejunum and Ileum to Food and Endocrinin, *Am. J. Physiol.* **128**:70 (Dec.) 1939.

44. (a) Puestow, C. B.: The Activity of Isolated Intestinal Segments, *Arch. Surg.* **21**:565 (April) 1932. (b) Ivy, Farrell and Lueth.¹²

45. Nasset, E. S., and Pierce, H. B.: On the Influence of Peptones and Certain Extracts of Small Intestine upon the Secretion of Succus Entericus, *Am. J. Physiol.* **113**:568 (Nov.) 1935.

46. Nasset, E. S.: Enterocrinin: A Hormone Which Excites the Glands of the Small Intestine, *Am. J. Physiol.* **121**:481 (Feb.) 1938.

47. von Kokas, E., and von Ludany, G.: Weitere Untersuchungen über die Bewegung der Darmzotten, *Arch. f. d. ges. Physiol.* **223**:421. 1930.

48. von Kokas, E., and von Ludany, G.: Die hormonale Regelung der Darmzottenbewegung: I, *Arch. f. d. ges. Physiol.* **222**:293, 1933.

49. von Kokas, E., and von Ludany, G.: Nouvelle recherches sur la régulation hormonale des mouvements des villosités intestinales, *Compt. rend. Soc. de biol.* **117**:972, 1934.

50. von Kokas, E., and von Ludany, G.: Die hormonale Regelung der Darmzottenbewegung: II. Das Villikin, *Arch. f. d. ges. Physiol.* **231**:182, 1934. von Kokas and von Ludany.⁴⁸

51. von Kokas, E., and von Ludany, G.: Ueber das Villikin, *Arch. f. d. ges. Physiol.* **234**:589, 1934.

52. von Kokas, E., and von Ludany, G.: Relation Between "Villikin" and the Absorption of Glucose from the Intestine, *Quart. J. Exper. Physiol.* **28**:15 (June) 1938.

53. Loew, E. R.; Gray, J. S., and Ivy, A. C.: The Effect of Acid Stimulation of the Duodenum upon Experimental Hyperglycemia and the Utilization of Glucose, *Am. J. Physiol.* **128**:298 (Jan.) 1940.

54. La Barre, J.: La sécrétine, Paris, Masson & Cie, 1936.

55. Loew, E. R.; Gray, J. S., and Ivy, A. C.: The Effect of Duodenal Instillation of Hydrochloric Acid upon the Fasting Blood Sugar of Dogs, *Am. J. Physiol.* **126**:270 (June) 1939.

sugar level of trained, unanesthetized dogs.⁵⁶ Throughout these investigations, critical examination of the earlier literature disclosed apparently adequate explanations for the contrary results reported by the previous investigators. The possibility, however, has not been excluded that the gastrointestinal tract may elaborate an "insulin synergist" which affects carbohydrate metabolism.

INTESTINAL MOTILITY

It has been repeatedly observed that segments of the small intestine still in normal continuity with the remainder of the intestine exhibit an increase in motility when the animal is fed.⁵⁷ This augmented activity may appear within several minutes after feeding. It occurs when food is admitted to the stomach through a gastrostomy, and it is not abolished by bilateral vagotomy. However, no one has been able to demonstrate this phenomenon in a loop of intestine removed from continuity with the rest of the intestine, whether the loop retains its nerve supply or is denervated, or is transplanted.⁵⁸ These observations practically rule out a hormonal mechanism and favor the view that local stimuli are of the greatest importance. It has been shown that local chemical and mechanical stimuli are very effective in evoking intestinal movements and that their action is abolished by local anesthetization of the mucosa.⁵⁹

Certain intestinal extracts contain a substance which is neither histamine nor choline but which augments intestinal motility.²⁰ My co-workers and I have occasionally obtained enterogastrone preparations that have produced gastric motor inhibition followed by stimulation. With one such extract we were successful in isolating two fractions, one which produced inhibition only and one which produced stimulation only. However, until such time as some motor activity of the gastrointestinal tract has been shown to involve a humoral mechanism, such substances are of pharmacologic interest only. To attach physiologic significance to them at the present time is to advance an explanation for an unknown phenomenon.

SALIVARY GLANDS

There is no evidence indicating that an internal secretion is specifically concerned in the secretion of saliva.⁶⁰

THERAPY

Although the internal secretions of the gastrointestinal tract are of great physiologic interest, none of them have been demonstrated to possess therapeutic value. Histamine, if it is gastrin, and secretin possess diagnostic value. Cholecystokinin is of potential diagnostic value. Enterogastrone and urogastrone possess therapeutic promise.

56 Loew, E. R., Gray, J. S., and Ivy, A. C. Is a Duodenal Hormone Involved in Carbohydrate Metabolism? *Am. J. Physiol.*, to be published.
57 (a) Barcroft, J., and Robinson, C. S. A Study of Some Factors Influencing Intestinal Movements, *J. Physiol.* **67**: 211 (March) 1929.
(b) Castleton, K. B. An Experimental Study of the Movements of the Small Intestine, *Am. J. Physiol.* **107**: 641 (March) 1934. (c) Hukuhara, T., Kinose, S., and Masuda, K. Beiträge zur Physiologie der Bewegung des Duodenums, *Arch. f. d. ges. Physiol.* **238**: 124, 1936.
(d) Douglas, D. M., and Mann, F. C. The Activity of the Lower Part of the Ileum of the Dog in Relation to the Ingestion of Food, *Am. J. Digest. Dis.* **6**: 434 (Sept.) 1939.

58 Ivy, A. C., and Vloedman, The Small Intestine in Hunger, *Am. J. Physiol.* **72**: 99 (March) 1925. Quigley, J. P., Highstone, W. H., and Ivy, A. C. A Study of the Propulsive Activity of a Thirty Vella Loop of Intestine, *ibid.* **108**: 151 (April) 1934. Hukuhara, T., and Kinose, S. Existiert das Hormon der Darmbewegung, welches sich durch die Einwirkung der Zäure auf die Darmschleimhaut bildet? *Jap. J. Med. Sci.* **11**, *Biophys.* **5**: 45 (March) 1938. Ivy, Farrell and Lueth.²² *Puestow*, **14**. Douglas and Mann.⁵⁴

59 Borchardt, W. Gibt es nervöse Chemoreceptoren in der Darmmuskelschleimhaut? *Arch. f. d. ges. Physiol.* **215**: 402, 1926.

60 Ivy, A. C. *Gastrointestinal Principles, in Glandular Physiology and Therapy*, Chicago, American Medical Association, 1935, p. 439.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

THEODORE G. KLUMPP, M.D., Secretary.

SOBISMINOL SOLUTION-CUTTER (See New and Nonofficial Remedies, 1941, p. 169).

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EPHEDRINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1941, p. 245).

EPHEDRINE HYDROCHLORIDE-BREON.—A brand of ephedrine hydrochloride-U. S. P.

Manufactured by George A. Breon & Co., Inc., Kansas City, Mo.
"Caplets" Ephedrine Hydrochloride Breon, 0.05 Gm. (¾ grain)

EPHEDRINE HYDROCHLORIDE-ENDO.—A brand of ephedrine hydrochloride-U. S. P.

Manufactured by Endo Products, Inc., Richmond Hill, N. Y.
Capsules Ephedrine Hydrochloride Endo, ¾ grain
Capsules Ephedrine Hydrochloride Endo, ½ grain
Capsules Ephedrine Hydrochloride Endo, ¼ grain

THIAMINE HYDROCHLORIDE-MERRELL (See New and Nonofficial Remedies, 1941, p. 553).

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Solution Thiamine Hydrochloride Merrell, 10 mg per cc, 10 cc vials
Each cubic centimeter contains 10 mg of thiamine hydrochloride, equivalent to 3.333 U. S. P. units, and 5 mg of chlorobutanol in sterile distilled water.

Solution Thiamine Hydrochloride Merrell, 50 mg per cc, 5 cc vials.
Each cubic centimeter contains 50 mg of thiamine hydrochloride, equivalent to 16.667 U. S. P. units, and 5 mg of chlorobutanol in sterile distilled water.

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SATURDAY, SEPTEMBER 20, 1941

PARACELSUS AFTER FOUR HUNDRED YEARS

Four hundred years ago on September 24 one of the most controversial personalities in medical history, Philippus Aureolus Theophrastus Bombastus of Hohenheim, called Paracelsus, "exchanged life for death" in his forty-eighth year. Bombast was his family name. The word implying scorn was applied to him since the English Galenist Walter Harris used it in the sentence "thy Bombastick name shall be despised."

In his days and for centuries afterward Paracelsus was regarded as a boasting, uneducated charlatan, though he was graduated rightfully with the laurea in medicina at the Ateneo of Ferrara. He was described as an egotistic noisemaker, a drunken braggart, a devil worshiper. More moderate critics called him an eccentric fool, a zealous halfwit, a superstitious visionary, a megalomaniac. Nevertheless he was an ingenious pathfinder for medicine and a physician of special originality and skill. The name of medical Luther too clung to him, though this was originally meant as a mockery. Hartmann¹ called him a most enlightened mind, a teacher for the future. A romantic doctor² who edited the collected works of Paracelsus in four volumes of a thousand pages each in modern German recommends his therapeutics for lupus and gout, even cancer, and the Deutsche Volksheilbewegung, patronized by the Nazis, demanded in 1936 the reversal of the present healing art according to the concepts of Paracelsus!

Sudhoff,³ who for fifty years studied the problem and edited the authentic publications of Paracelsus in fifteen big volumes, made possible an evaluation of the work and the man. Sudhoff showed that up to 1658 not less than three hundred and ninety editions, reprints, collections and translations appeared of his writings, an impressive sign of the interest the works of Paracelsus had found.

Most of them were not printed in the lifetime of Paracelsus, owing to the influence of his adversaries. Spurious publications misused the attraction of his name and adulterated his teachings. Strunz,⁴ Hartmann,⁵ Achelis⁶ and Netzhammer⁷ in America and in England Stillman,⁸ Stoddard,⁹ Waite¹⁰ and Ferguson¹¹ have helped to reassess the personality, the accomplishments and the influence of this not always pleasing yet upright character.

As for his ethical standards, Paracelsus had vowed "I shall never cede from my medical work as long as God favors me with this mission. I shall oppose all false medicine and teachings. I shall love the sick more than myself, not take recompense that I do not deserve. I shall advise the careworn, look after the melancholic." He scorned physicians promenading in cloaks of silk and gloves, wearing chains and rings of gold instead of going in suitable attire into the laboratory to augment their knowledge.

More difficult to appraise are the accomplishments he attained scientifically. He must have been a most successful practitioner; from all parts of Europe came requests for his help in severe cases from high ranking personalities. He apparently had that "God given faculty" of an intuitive therapist combined with broad practical knowledge. Yet he openly admitted that he was "not always capable of giving at once an opinion; such was customarily pretended only by the 'humoral' physicians." If anybody, it was he who treated the diseased individual; yet he composed objective descriptions of particular diseases: of hospital gangrene; of syphilis in its variability, its infectiousness and its hereditability; of the tartaric, i. e. the stone, diseases, which he explained as the effect of precipitations as he observed them in his chemical experiments; of cretinism due to goiter in the parents; of miners' diseases (independently of his contemporary Agricola). St. Vitus's dance, St. Anthony's fire, mental diseases he declared were caused not by any saints or demons but by natural influences: "Local decay or decay of the organs of expulsion generate disease." Psychic therapy he consciously applied: "There are physicians who have the power to overcome diseases by their will power." In surgery he approached the

4. Strunz, F.: *Theophrastus Paracelsus*, Leipzig, Eugen Diederichs, 1903.

5. Hartmann, R. J.: *Theophrast von Hohenheim*, Stuttgart, F. G. Cotta'sche Behandlung Nachfolger, 1904. Paracelsus, eine Studie, Leipzig, Huber & Co., 1924. *Theophrastus Paracelsus, Idee und Problem seine Weltanschauung*, Leipzig, Anton Pustet, 1937.

6. Achelis, J. D.: *Ueber die Syphilischriften Theophrasts von Hohenheim*, Heidelberg, 1939.

7. Netzhammer, P. R.: *Theophrastus Paracelsus*, Einsiedeln, S. utzerland, Benziger & Co., 1901.

8. Stillman, J. M.: *Theophrastus Bombastus von Hohenheim called Paracelsus: His Personality and Influence as Physician Chemist and Reformer*, Chicago, Open Court Publishing Company, 1920.

9. Stoddard, A. M.: *The Life of Paracelsus*, London, J. Murray, 1911.

10. Waite, A. E.: *The Hermetic and Alchemical Writings of Aureolus Philippus Theophrastus Bombast of Hohenheim, called Paracelsus the Great*, London, James Elliott & Co., 1894.

11. Ferguson, J.: *Bibliotheca Chemica*, Glasgow, J. Maclehoose & Sons, 1906. Paracelsus, in *Encyclopedia Britannica*, ed 14, New York, Encyclopedia Britannica, Inc., 1929, vol 17, p 251.

1. Hartmann, F.: *The Life and the Doctrines of Paracelsus*, ed 4, New York, Macos Publishing & Masonic Supply Company, Inc., 1932.

2. Aschner, B.: *Paracelsus sämtliche Werke*, Jena, Gustav Fischer, 1926-1932.

3. Sudhoff, K.: *Versuch einer Kritik der Echtheit der Paracelsischen Schriften*, Berlin, G. Reimer, 1894, pt. 1; 1898, pt. 2, sect. 1; 1899, pt. 2, sect. 2. Paracelsus Sämtliche Werke, herausgegeben von K. Sudhoff und W. Mathieson, Munich, O. W. Barth, 1922-1933.

aseptic ideal: "Keep the wounds clean, probe, cut, saw as little as possible, and they will heal." His "Grosse Wundarznei" is mostly concerned with avoiding operation. His laboratory activity raised alchemy to chemistry. "Alchemy is to make neither gold nor silver but the supreme essences and to direct them against diseases." He propagated the application of minerals: "Nothing is a poison in itself; all depends on the proper preparation, dosage and indication." To ascribe character, sickness and other destinies to the influence of heavenly bodies he regarded as superstition, a ridiculous tale of the astrologers: "The course of Saturn lengthens or shortens nobody's life; a child owes nothing to star constellations but all to his parents." All this was progressive and to us seems good and reasonable. But in his time it was rebellion against the dogmas in medicine which doctors had to follow strictly. Paracelsus used the first opportunity when as a teacher at the University of Basel he could divulge his ideas to throw fierce invectives against the then all powerful scholastic system of medical education. His declaration of war was followed by hostile steps of the faculty, students, doctors and apothecaries, whom in retort he assailed for their ignorance, hypocrisy, exploitation and killing of patients, at the same time extolling his superiority: "Ye Avicenna, Galen, Riazes, ye Suevia, Vienna, Cologne, ye Italy, Greece, Arabia, Israelita, after me, not I after you," he called out; "the time will come when all of you will be a contempt to the world. Mine will be the monarchy!"

The church granted him, apparently in recognition of his genuine piety and charity, honorable interment notwithstanding his caustic invectives against pope, cleric and ceremonies of the church and his rejection of every authority. For a long time the medical world could not shake off the wrath against his heresy. It even broadened because his ideas reached far wider circles after his death, when his works, so far mostly existing only in handwriting, in the majority not his own but of disciples to whom he used to dictate late in the night, were finally published. Yet this scientist believed in magic, though he condemned it. "Perforating the wax image of a man will cause him pain on the corresponding place," he wrote. He described, like plants or minerals, real and natural spirits living in water, air, earth and fire, not mixing with one another and dying if they come into the other elements. Rationalism and mysticism blended curiously in him. He accomplished a series of extraordinary advances which in themselves would rank him among the great physicians. The greatness of his strife for the highest spiritual achievements and the tragedy of the shortcoming of an indefatigable will against the unattainable attracted such poets as Goethe¹² and Browning;¹³

they appraised him as a symbol of the deep yearning of humanity.¹⁴ Medicine must concede historic importance to him, but "the science of the coming centuries" cannot "grow on his soil."

RENAL FAILURE IN CRUSH INJURIES

Cases recently reported in the *British Medical Journal*¹ indicate what appears to be a new syndrome: fatal renal failure after crushing of the limbs by fallen débris. Here is a typical history: The patient has been buried for several hours with pressure on a limb or limbs. On admission to the hospital his condition may be good, the pulse and blood pressure normal. There is swelling of the limb, some local anesthesia and whealing. The edema spreads along the limb or limbs, movements of the limbs become limited or absent, and there may be various sensory disturbances, such as anesthesia, hyperesthesia or paresthesia. The hemoglobin is raised; a few hours later the blood pressure falls and shock ensues. This may be successfully combated by transfusions of serum, plasma or blood. The urine, however, diminishes and contains albumin and many dark brown and black granular casts. The patient is alternately drowsy and anxious. There is thirst and excessive vomiting. The blood urea and potassium become progressively higher, and death occurs within a week. Necropsy reveals necrosis of muscle and, in the renal tubules, degenerative changes and casts containing brown pigment. The casts on microscopic examination appear to be composed not of red cells but of desquamated epithelial cells, the pigment being probably due to hemoglobin excreted into the lumen from the blood stream. The gross and microscopic appearance of the kidney resembles the kidney of mismatched transfusion. There was, however, no clinical evidence of a transfusion reaction, and plasma samples taken seventeen and forty hours after transfusion showed no increased color. Furthermore, Mayon-White and Solandt¹ report a fatal case with identical lesion in the kidney in which blood transfusion was not given. Bywaters and Beall point out that this condition has not occurred in any of 24 shocked and injured patients without severe muscle crush treated in their hospital by blood or serum transfusion. The only common etiologic factor in all the reported cases appeared to be muscle necrosis. The rise in serum potassium noted in all of the cases may be explained on the basis of increased permeability of injured muscle and the more rapid escape of intercellular ions. The Medical Research Council Committee on Traumatic Edema has collected

14. The Paracelsus collection of the St. Louis Medical Society contains a rich set of original works of and publications on Paracelsus (Robert E. Schlüter collection). Catalogue of it has been published (*Bull. Hist. Med.* 9: 545 [May] 1941).

12. Bartscherer, A.: Paracelsus, Paracelsisten und Goethe Faust. Dortmund, Fr. Wilh. Ruhfus, 1911.

13. Browning, Robert: Paracelsus, 1833. Denison, C. P.: The Paracelsus of Robert Browning, New York, Baker & Taylor Company, 1911.

1. Bywaters, E. G. L., and Beall, D.: Crush Injuries with Impairment of Renal Function, *Brit. M. J.* 1: 427 (March 22) 1941. Beall, D.; Bywaters, E. G. L.; Belsey, R. H. R., and Miles, J. A. R.: A Case of Crush Injury with Renal Failure, *ibid.*, p. 432. Mayon-White, R., and Solandt, O. M.: A Case of Limb Compression Ending Fatally in Uremia, *ibid.*, p. 434.

11 reports of such cases, 6 of which proved fatal, while recovery occurred in 5.

In an effort to explain the mechanism of renal failure it was assumed that toxic substances are formed in the damaged muscle and that these, on release of compression, pass into the circulation and eventually damage the kidneys. In 1 instance early amputation of the affected limb failed to save life, while in the others recovery took place without amputation. The therapeutic attempts were directed toward dilution of the toxins and promotion of diuresis, while adrenal cortex extract was given to check the rise of blood potassium.

Fatey and Robertson² thought that the syndrome might be due not to liberated autolytic bodies from damaged muscles but to a loss of substances from the circulation into the affected limb on the release of compression. This would readily explain the shock and possibly the renal failure as a secondary manifestation of shock. If this is true, large intravenous injections of plasma or serum would tend to increase the loss of blood constituents into the damaged limb with subsequent increase in edema. The logical procedure seemed to be to prevent this leakage of fluid from the circulation. These authors treated 2 cases by applying intermittent positive pressure up to 60 mm. of mercury to the edematous area, using a specially large blood pressure cuff. In both cases there was a greatly increased output of urine, softening and later disappearance of edema, a fall in the blood urea to normal and recovery.

Current Comment

THE RISING TREND OF THE 1941 BIRTH RATE

According to the Bureau of the Census,¹ after falling steadily for two centuries the long range United States birth rate has turned sharply upward. Provisional tabulations for 1940 showed over 91,000 more births in that year than in 1939. The birth rate per thousand of population jumped from 17.3 to 17.9. Moreover, during the first four months of 1941 about 20,000 more babies were born in the United States than in the first third of 1940. The Census Bureau statisticians predict, therefore, a rate of 18.5 for 1941, or only 0.3 of a baby less than the last reported (1937) rate in Germany. If present birth and death rates continue, it is pointed out, the population of the United States will increase approximately 7 per cent in a generation. This is an interesting forecast, but it must be recalled that the Census Bureau has within the past six months in connection with the decennial census also pointed out that if the present birth and death rates continue the population of the United States will fail to maintain its numbers by approximately 4 per cent in a generation. As

has been noted in editorials in *THE JOURNAL*, such narrow swings when not associated with any evidence of clearcut biologic change in fertility must be interpreted with extreme conservatism in whichever direction they occur, unless long continued, and cannot be considered as testimony on which the future trend can be adequately foretold.

EFFECT OF ROENTGEN RAYS ON ENZYMES

The assumption that roentgen rays and gamma rays affect enzymes only when the dose is enormous is based largely on the results of radiation on crude enzyme preparations. Since cell division is inhibited by radiation doses which have been reported to have little or no destructive action on enzymes, it has been concluded that the inhibition is produced by a process in which enzymes do not play an important part. The availability of a number of enzymes in highly purified form has made possible a careful reinvestigation of the effect of roentgen rays on enzymes, and the data obtained require a revision of ideas regarding the resistance of enzymes to radiation. Dale¹ has examined the effects of roentgen rays on crystalline carboxypolypeptidase and on partially purified polyphenoloxidase. In dilute solutions, relatively small doses of radiation, considerably below those used normally in radiotherapy, produce inactivation of both these enzymes. The degree of inactivation of each enzyme is a function of the concentration of the enzyme for a given dose of irradiation. In the case of carboxypolypeptidase it has been demonstrated that a definite amount of radiation energy absorbed corresponds to a constant amount of enzyme inactivated. As a result of this fact, the inactivating dose of roentgen rays decreases with decreasing concentration of the enzyme to levels far below those normally used in radiotherapy. Furthermore, the inactivation of carboxypolypeptidase does not take place when the enzyme is acting on its substrate during irradiation, whereas the enzyme irradiated under the same conditions without its substrate is inactivated to the extent of 85 per cent. It is apparent from these data that previous unsuccessful efforts to obtain an effect of irradiation, except in enormous doses, on enzymes was due to the use of too impure enzyme preparations and the failure to employ sufficiently dilute enzyme solutions. The fact that two different types of enzymes were affected similarly in the study mentioned adds significance to the data and suggests that other enzymes may respond to radiation in a similar manner. It is apparent that the destructive action of roentgen rays on tissues, frequently described as an indiscriminate effect on all living tissues causing a massive physical-chemical change in the protoplasm, may be considerably more subtle. The concentration of a particular enzyme in the tissue, its state in the tissue during irradiation and the extent to which the enzyme is a limiting factor in cell metabolism are probably factors in determining the degree of radiosensitivity of various cells.

2. Patey, David H., and Robertson, J. Douglas: Compression Treatment of Crush Injuries of Limbs, *Lancet* 1: 780 (March 22) 1941.
1. The Registrar, Department of Commerce, Bureau of the Census
6, July 15, 1941.

1. Dale, W. M.: *Biochem. J.* 34: 1367 (Nov.) 1940.

MEDICAL PREPAREDNESS

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.

THE MEDICAL PROFESSION AND THE CIVILIAN DEFENSE PLAN

DONALD GORDON, M.D.

NEW YORK

When nations go to war, the medical profession is used as the salvage corps to return the human victims of war's destruction to the fighting line of defense. In peace the medical profession acts as a salvage corps to return the victims of civilian casualties to their homes, families and work, always trying to reduce the economic loss to a minimum. Our government has the great task of organizing a civilian defense plan, hitherto not deemed necessary because of our apparently isolated geographic position. This plan, under the able directorship of Mayor Fiorello LaGuardia of New York and his committee members, is well under way.

The medical profession, organized and trained in the special field of salvaging victims of civil and battle casualties, has opened to it through this emergency an opportunity to show again its loyal service. It is the duty of every medical man to put forth his best effort to support this plan. Our profession might be likened to an army division to which may be assigned not only the physical welfare of the disaster victims but the health and well-being of all active members of the plan who are participating in every activity pertaining to its accomplishment.

Wars have furnished the medical profession a field for experience in the study of trauma, disease and sanitation, which it has been able to apply in civil life with success. In turn the doctor, taking this war experience into civil life, has by study and application of its principles developed better ways to handle the civilian casualties and furnish improved methods for dealing with the casualties of subsequent wars, as has been demonstrated in the present conflict.

In the main there is little difference between the varying degrees of civil casualties and those caused by wartime devices of destruction. Our civil casualties go on forever. Each year the nation's civil casualties overshadow the war mortalities and morbidity.

There has never been a time in this country when the doctor has had an equal opportunity for unity with the public and the state in placing the care of the injured on so large and efficient a basis. Owing to the fact that there will be so many of the citizens of the nation made aware of their responsibility for the mutual welfare of their fellow beings, if they are adequately trained in the first principles of the prevention of accidents and sickness, the transportation and care of the injured, and sanitation, benefit should immediately arise. Furthermore, this improvement should not be allowed to be a temporary one. It should furnish a nucleus for the

establishment of a plan of similar procedure for the future, after the present emergency has passed. The medical profession can approach the support of this plan with the knowledge that it is one of the great opportunities to prepare for the future by extended effort in its support.

The American Red Cross for many years has trained citizens of this country to render skilled first aid to victims of civil casualties. It has taught procedures that have been standardized through many years of experience in disaster and war. It has taught the citizens the simple principles requisite to prevent shock, arrest hemorrhage, minimize infection by covering wounds, the desirability of splinting fractures before moving the victim of an accident, the importance of not moving a victim except from a hazardous position and, if this has to be done before medical aid, to do so in a way which will avoid further injury to the victim. It has taught the need of obtaining immediate medical care and furnishing the doctor with important facts of the injury. The national Red Cross gives a certificate only to those who have taken courses given by an accredited first aid instructor trained in Red Cross methods.

Every doctor, therefore, who might be called on to teach first aid should see that he becomes an accredited instructor, lest his students be deprived of a certificate. When this is not practical, the physician should take it on himself to see that the first aid courses in his community are given by accredited Red Cross instructors or those assigned by the defense plan to teach Red Cross first aid, and that they follow the Red Cross manual procedures.

First aid as taught by the Red Cross to lay persons is not medical treatment. Only by adherence to such guidance can the confusion be avoided which naturally would arise when incomplete and unstandardized methods might conflict with medical opinion. The problem is largely one for the doctor.

By utilizing these principles, trained groups will in the future be in a position to lower the mortality incident to trauma and render comfort and health to innocent victims of civilian accidents. Furthermore, such a plan would always afford a reserve of trained experienced citizens and physicians to meet any subsequent emergency which might arise.

In the application of the defense plan, one should keep in mind that to help is to use one's skill as a member of a team, not to inject personality other than use it to be helpful to a team mate. Conflict can be avoided only in this way. No plan is perfect; anything that has ever been done is not ideal. The purpose is to aid in getting the best out of the material at hand. When this has afforded experience, better things can be done.

DENTAL PREPAREDNESS

Abstract of a Report of the Committee on Dental Preparedness of the American Dental Association

MILITARY AND CIVIL DENTAL NEEDS OF THE NATION

The administrators of the Selective Service system concluded that the resources of dentistry should be conserved as far as possible. In order to ensure the greatest economy of dental resources it issued, under date of May 12, a memorandum to all state directors (1-99) which contained the following significant statement: "Although the War Department reports that there are now sufficient officers in the Dental Corps Reserve to meet their current requirements, . . . it is apparent that there is an overall and increasing national shortage of dentists. Further, the supply is not distributed in accordance with the population, so that consequently there are present shortages in some local board areas, while on the other hand there are present surpluses in other local areas. However, any such surpluses may be substantially reduced and even wiped out entirely by reason of the requirements of the armed forces and the increased civilian requirements." The memorandum continued: "The local board has the problem of deciding, subject to appeal, whether or not an individual dentist is so necessary to a community that he should be deferred from training and service under the provisions of paragraph 350-353 of the Regulations. This problem should be approached with a clear appreciation of the overall national shortage, and with the health needs of the community clearly in mind. In classifying, the local board should give full weight to the fact that the Dental Reserve Corps is at present of sufficient strength to fill current Army needs." Prior to the issuance of this memorandum, it was brought to the attention of the Dental Preparedness Committee, by its State Military Affairs Committee, and so reported to the Congress by this committee, that approximately one hundred dentists had been inducted into the service as privates. Since the foregoing memorandum was issued by Selective Service, few dentists have been inducted.

To alleviate the situation with respect to the inducted dentists, the War Department paralleled the action of Selective Service by the issuance of the following Directive dated May 5, under the signature of the Adjutant General:

Individuals who are qualified for appointment in the Dental Corps Reserve who have been inducted under the provisions of the Selective and Service Training Act of nineteen-forty should be encouraged to apply for appointment in order that they may serve in a professional capacity. Individuals accepted for appointment will be discharged and ordered to extended active duty for a period of twelve consecutive months.

While there may be some necessary delay in the issuance of commissions to the qualified dentists applying for commissions under the provisions of the foregoing directive, the committee is reliably informed that every effort is being made to expedite each case so that commissions may be awarded as promptly as possible.

DENTAL RESERVE OFFICERS

As a result of the call of dental reserve officers to active service and the induction of a limited number of dentists as privates, the public is faced with the loss of dental service, owing to reduction of dental personnel in certain areas of the United States which can ill afford such losses. It is therefore obvious that some dentists with reserve commissions are being called who could better serve the defense needs of their country by continuing in civilian practice. This presents a difficult situation that requires careful thought and action. In preparing a solution to the question, it must be remembered that men who have commissions in the Dental Reserve Corps accepted them in order that they might be of service to their country in time of national emergency. It is doubtful, however, whether many gave due consideration to the civilian needs of their respective communities and to the loss to these communities in the event that the dentist was called to active service. Naturally, some of them are now in a dilemma and are undecided how to serve their country best. On the other hand, the War, Navy and other departments have had these men on their reserve lists for years and have seen to it that they

received periodic instructions in military procedures, and when the national emergency arose they naturally turned to those resources for the most likely material available to meet emergency needs.

The Committee on Preparedness is of the opinion that this difficult situation should be met realistically. If a dentist is needed greatly in his home community, and this extreme need should be definitely determined by careful study irrespective of whether the dentist has a reserve commission or not, he should be deferred and another reservist ordered to active duty in his place. This course seems logical and equitable, since the War and Navy departments have pointed out that their reserve corps quota is currently more than sufficient to meet the needs. If later the Dental Reserve Corps personnel becomes dangerously low, it is believed that an appeal for volunteers would bring an immediate response. The committee does not advocate the plan that reservists resign their commissions to serve in civilian capacities. The national emergency might become so great that eventually it would be necessary to call them again to active service.

After carefully reviewing all phases of the situation, the committee concluded that the coordination of the military groups and Selective Service is desirable in order to achieve the greatest good for all concerned. In an effort to bring about a better situation, the committee suggests the following procedures for consideration and action:

1. That Selective Service continue its efforts to prevent the induction of dentists in a nonprofessional capacity in order that the "overall and increasing national shortage of dentists" be curtailed.

2. That local Selective Service boards maintain the normal or increased flow of dentists into the profession by continuing to defer predental and dental students, as recommended by General Hershey in his memorandum of May 12.

3. That the War Department continue to commission as promptly as possible all inducted and qualified dentists in accordance with the directive of the Adjutant General of May 5.

4. That the War and Navy departments, through their corps areas or districts or as they may otherwise determine, consider carefully the relation of population needs to dental facilities of each community from which a reserve officer is to be called, so that no community in the United States may be deprived of adequate dental personnel.

5. If a dental reserve officer is regarded as necessary to his community but feels that he would prefer to serve under his commission, or that he would be of more value to his country in that capacity, every effort should be made by the dentist himself and the state military affairs committee to see that adequate dental personnel is made available to compensate for his loss to the community. The practice of the dentist should be safeguarded in a form similar to that outlined in bulletin 13, issued by the Dental Preparedness Committee.

6. That state military affairs committees and local dental societies cooperate effectively with Army corps area dental surgeons and commandants of the Navy, in the study of each community within the area, to the end that the best situation may be developed to meet the military and civilian needs of the nation. While it is realized that the solution of this problem is not strictly a responsibility of the Army or Navy, and no undue hardship on individuals is intended because of their already exacting duties, yet the corps area dental surgeons and commandants of the naval districts could make a distinct contribution to the civilian population needs by reporting to state military affairs committees any lack of civilian dental personnel surrounding their respective camps and districts.

The committee urges all chairmen to get in touch with the corps area surgeons and commandant on matters of importance and warns against bringing outside political pressure to bear, as was done in a recent case. The relationships existing between the central committee, the state military affairs committees, corps area surgeons, commandants, Washington Army and Navy headquarters and Selective Service are splendid, and all these matters can be satisfactorily adjusted within the various agencies involved.

ARMY RESERVE OFFICERS ORDERED TO ACTIVE DUTY

FIRST CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, First Corps Area, which comprises the states of Maine, Vermont, New Hampshire, Rhode Island, Massachusetts and Connecticut:

ALLEN, RICHARD E, 1st Lieut, Cranston, R I, Fort Ethan Allen, Vt
APTER Harry, 1st Lieut, Hartford, Conn, Fort Devens, Mass
ASHERMAN, Edward G, 1st Lieut, Ogunquit, Maine, Fort Williams, Maine
BARCOMB, Albert E, 1st Lieut, Rochester, N H, Fort Devens, Mass
BLACKWELL, Claude C, 1st Lieut, Boston, Camp Edwards, Mass
BLANEY Cyril C, 1st Lieut, Westford, Mass, Fort Rodman, Mass
BOUCHER, Reginald H, 1st Lieut, North Providence, R I, Fort H G Wright, N Y
DUNSTAN, Paul L, 1st Lieut, Howard, R I, Camp Edwards, Mass
EDMONDSON, Richard E, 1st Lieut, Hartford, Conn, Camp Edwards, Mass
FERGUSON, Duncan H, Jr, 1st Lieut, Pawtucket R I, Fort Banks, Mass
FERRARA, Berardino T, 1st Lieut, Providence, R I, Camp Edwards, Mass
FOLLY, James V 1st Lieut, Cambridge, Mass, Camp Edwards Mass
FREEMAN John J, 1st Lieut, Newington, Conn, Fort Ethan Allen, Vt
GLADSTONE, Robert W, 1st Lieut, Pittsfield, Mass, Fort Devens, Mass

GLENN, William W L, 1st Lieut, Boston, Fort Devens, Mass
HELMAN, Milton E, 1st Lieut, Chelsea, Mass, Camp Edwards, Mass
HOWARD, Donald O, 1st Lieut, Boston, Fort Devens, Mass
HUBBARD, Edward O, Jr, 1st Lieut, Peterborough, N H, Camp Edwards, Mass
MAGNER, John P, 1st Lieut, West Rutland, Vt, Fort Devens, Mass
METZGAR, John G, 1st Lieut, Augusta, Maine, Fort Williams Maine
MILLER, George F, 1st Lieut, Dorchester, Mass, Camp Edwards, Mass
O'LEARY, James J, Jr, 1st Lieut, Jamaica Plain, Mass, Fort Rodman, Mass
POPOFF, Constantine, Lieut Col, Haverhill, Mass, Fort Devens, Mass
ROTTENBERG, Louis A, 1st Lieut, Brookline, Mass, Fort Banks, Mass
SANDER, Hermann N, 1st Lieut, Manchester, N H, Fort Devens, Mass
SAVAGE, Edward G, 1st Lieut, Sharon, Mass, Fort Banks, Mass
SMITH, Jasper A, 1st Lieut, Boston, Camp Edwards, Mass
STARBUCK, George W, 1st Lieut, Boston, Camp Edwards, Mass
WALKER, Edmund F, 1st Lieut, Worcester, Mass, Fort Devens Mass
WELLS, Ralph H Captain, Lexington, Mass, Camp Edwards, Mass

Orders Revoked

CHIAMPA, Francis P, 1st Lieut, Brighton, Mass
FOLLY, James V, 1st Lieut, Cambridge, Mass
FREEMAN, John J, 1st Lieut, Newington, Conn
O'LEARY, James J, Jr, 1st Lieut, Jamaica Plain, Mass

SECOND CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Second Corps Area, which comprises the states of New York, New Jersey and Delaware

ANDRICK, Eugene A, 1st Lieut, Hoboken N J Mitchel Field N Y
COLLINS Stuart V, 1st Lieut, Alleghany, N Y, Reception Center, Camp Upton, N Y
CRISP, Joseph C, 1st Lieut, Asbury Park N J, Fort Jackson, S C
DEYOE, Daniel H, Captain, Niskayuna, N Y, Trenton Induction Station Trenton, N J
GILLMAN, Isidore, 1st Lieut, Brooklyn, Fort McClellan Ala
GOETLIEB Norman T, 1st Lieut, Brooklyn, Camp Shelby, Miss
GUALTIERI, Rosario, 1st Lieut, Astoria, L I, N Y, Camp Stewart, Ga
HURTES, Harold C, 1st Lieut, Brooklyn, General Dispensary, New York
JARRETT William Armistead, 1st Lieut, New York, Camp Grant, Ill
KNUDSEN, Arnold F, 1st Lieut, Brooklyn, General Dispensary, New York
LEVIN, Jack, 1st Lieut, Freehold, N J, Fort Jackson, S C
MAGIDAY, Morton, 1st Lieut, New York, Recruiting and Induction Service Headquarters 2d Corps Area
MASOR, Nathan, 1st Lieut, Brooklyn, 4th Armored Division, Pine Camp, N Y
NADVORNEY, Leo, 1st Lieut, New York, 12th Infantry, Fort Dix, N J

NATHANSON, Norman, 1st Lieut, Long Branch, N J, Fort Jackson, S C
PALANKER, Harold, 1st Lieut, Buffalo, Fort Jackson, S C
RIDER, Thomas, 1st Lieut, West Albany, N Y, Fort Hancock, N J
RUMORE, Peter C, 1st Lieut, Brooklyn, Fort Jackson, S C
RYAN, Jeremiah E, 1st Lieut, New York, Station Hospital, Pine Camp, N Y
SCHNITTKER, Sidney M, 1st Lieut, New York, Camp Shelby, Miss
SCHWARTZ, Charles I, 1st Lieut, Jersey City, N J, Fort Du Pont, Del
SERVOSS, Spencer J, 1st Lieut, Medina, N Y, Madison Barracks, N Y
SEWALL Arthur D, 1st Lieut, Bridgeton, N J, Station Hospital, Fort Dix, N J
SHARLIN, Herbert S, 1st Lieut, Newark, N J, Station Hospital, Pine Camp, N Y
STIEFEL, Frederick H, 1st Lieut, Brooklyn, 8th Division, Fort Jackson, S C
STONEHILL Alfred A, 1st Lieut, Weehawken, N J, Fort Dix, N J
TOBEY, Howard C, 1st Lieut, Elizabeth, N J, Recruiting and Inductive Service, 39 Whitehall Street, New York
WITT, Norman H, 1st Lieut, Dobbs Ferry, N Y, Madison Barracks, N Y

Orders Revoked

CARRUTHERS, Roderick J, 1st Lieut, Fort Ontario, N Y
DURR, Walter J, 1st Lieut, Fort Dix, N J
HERO, Byron A, 1st Lieut, Gander, Newfoundland

THIRD CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Third Corps Area, which comprises the states of Pennsylvania, Virginia, District of Columbia and Maryland.

AMBROSE, Edward Phelps, Jr, 1st Lieut, Radford, Va, Camp Lee, Va
BELBER, Joseph Paul, 1st Lieut, Philadelphia, Fort Belvoir, Va
BLANK Samuel, 1st Lieut, Philadelphia Camp Claiborne La
CHOLLAH, Joseph Paul, 1st Lieut, Edwardsville, Pa, Indiantown Gap Military Reservation, Pa
FORMAN, Simon Benjamin, 1st Lieut, Philadelphia Camp Claiborne, La
FRANK Irving Leslie 1st Lieut, Philadelphia, Camp Claiborne La
FRANTZ, Robert Ritchie, 1st Lieut, Philadelphia Camp Claiborne La
FREEMAN, Irving 1st Lieut, Baltimore, Fort Belvoir, Va
FRIEDMAN, Paul Sigmund, 1st Lieut, Philadelphia, Indiantown Gap Military Reservation Pa
GALLAGHER, Robert James, 1st Lieut, Yeadon, Pa, Indiantown Gap Military Reservation, Pa
GOLDSMITH, Charles Porter, 1st Lieut, Catonsville, Pa, Camp Claiborne La
GOODMAN, Howard Captain, Towson, Md, Camp Claiborne, La
GOWEN, Leo Francis, 1st Lieut, Philadelphia Fort Belvoir, Va
GRATZ, Morton M, 1st Lieut, Appomattox, Va, Camp Claiborne La
GRIER George Smith, III, 1st Lieut, Baltimore, Fort Eustis Va
HUDSON, Victor Talmadge, 1st Lieut, Bethlehem, Pa, Fort Eustis, Va

JACOBSON, Benjamin Dee, 1st Lieut, New Cumberland, Pa, Camp Claiborne, La
JONES, Donald Emerson, 1st Lieut, Mount Pleasant, Pa, Fort Lister, Va
KANICH, Joseph John Captain, Richmond, Va, Fort Oglethorpe, Ga
KATZMAN, Howard, Captain Washington D C, Camp Lee Va
KNOTTS, Frank Louis, 1st Lieut, Baltimore, Fort Belvoir, Va
KRISCH Kube 1st Lieut, Philadelphia, Camp Claiborne La
KULCZYCKI, Edward 1st Lieut, Scranton Pa, Camp Claiborne La
KULCZYCKI, John, Jr, Captain Richmond Va, Camp Blanding Fla
LEVIN, Hermann Harry, 1st Lieut, New Castle, Pa, Camp Claiborne, La
LIEBER, Maurice Franklin, 1st Lieut, Washington, D C, Camp Claiborne La
LONG, Joseph Fote, 1st Lieut, Roaring Spring Pa, Fort Belvoir, Va
MATSKO, Stephen Edmund 1st Lieut, McAdoo, Pa, Indiantown Gap Military Reservation Pa
MC CARTHY William Charles, 1st Lieut, Crafton, Pa, Indiantown Gap Military Reservation, Pa
MC CALL, George Winford 1st Lieut, Baltimore, Fort George G Meade, Md
MAIKIN Samuel Harold Captain Bedford, Va, Camp Claiborne La
MARGOTTA, Victor James 1st Lieut, Dunmore, Pa, Camp Claiborne, La
MILLER, George William III, 1st Lieut, Philadelphia, Indiantown Gap Military Reservation Pa
MILLER, Samuel George, 1st Lieut, Pittsburgh, Fort George G Meade, Md

O'DONNELL, Thomas Francis, 1st Lieut., Salisbury, Md., Camp Claiborne, La.
 PUTNAM, Henry Mitchell, 1st Lieut., Philadelphia, Fort George G. Meade, Md.
 ROSENBAUM, Armand Leonard, 1st Lieut., Philadelphia, Indiantown Gap Military Reservation, Pa.
 SCHEIE, Harold Glendon, Captain, Philadelphia, Camp Lee, Va.
 SCHMIDT, James Ross, 1st Lieut., Abington, Pa., Camp Lee, Va.
 SCHREIBER, John Otto, 1st Lieut., Washington, D. C., Fort Eustis, Va.
 SINGER, Solomon, 1st Lieut., Jonesville, Va., Camp Claiborne, La.
 TAYLOR, Morgan Fitch, 1st Lieut., Susquehanna County, Pa., Indiantown Gap Military Reservation, Pa.
 TISHERMAN, Robert Carl, Captain, Pittsburgh, Indiantown Gap Military Reservation, Pa.
 TORIN, Jack Earle, 1st Lieut., Russellton, Pa., Fort Story, Va.

TRONEL, Richard Scotlar, 1st Lieut., Allentown, Pa., Indiantown Gap Military Reservation, Pa.
 VAN BUSKIRK, Kryder Evans, 1st Lieut., Pottstown, Pa., Indiantown Gap Military Reservation, Pa.
 WARD, George Hugh, 1st Lieut., Clairton, Pa., Indiantown Gap Military Reservation, Pa.
 WILLIAMS, Robert Hilton, 1st Lieut., Baltimore, Fort Eustis, Va.
 WUNSCH, Joseph John, 1st Lieut., Scranton, Pa., Indiantown Gap Military Reservation, Pa.
 ZERBE, Robert Bruce, 1st Lieut., Tremont, Pa., New Cumberland, Pa.
 ZEMAN, Erwin Doehren, 1st Lieut., Erie, Pa., Camp Lee, Va.

Orders Revoked

SORRELL, William George, 1st Lieut., Amelia, Va.
 WEINBERG, Tobias, 1st Lieut., Baltimore.

FOURTH CORPS AREA

The following additional medical reserve corps officers have been ordered to active duty by the Commanding General, Fourth Corps Area, which comprises the states of Tennessee, North Carolina, South Carolina, Alabama, Georgia, Mississippi, Florida and Louisiana:

ADAIR, Morgan C., 1st Lieut., Atlanta, Ga., Fort Bragg, N. C.
 ALLGOOD, James E., 1st Lieut., Inman, S. C., Camp Stewart, Ga.
 ATKINSON, Robert H., 1st Lieut., Water Valley, Miss., Fort Jackson, S. C.
 DAVIDOFF, Theodore, 1st Lieut., DeRidder, La., Fort Jackson, S. C.
 ESTES, Harry M., 1st Lieut., Nashville, Tenn., Camp Wheeler, Ga.
 FABBRICANTE, Salvatore, 1st Lieut., Morton, Miss., Fort Bragg, N. C.
 GENGELBACH, Robert D., 1st Lieut., Alexandria, La., Fort Benning, Ga.

GIBSON, Francis D., Jr., 1st Lieut., Gibson, N. C., Fort McClellan, Ala.
 GRAFFAGNINO, Peter C., 1st Lieut., New Orleans, Fort Benning, Ga.
 HALFORD, Richard F., 1st Lieut., Miami, Fla., Fort McPherson, Ga.
 HAWKINS, William C., 1st Lieut., Asheville, N. C., Headquarters 4th Corps Area, Office of Surgeon, Atlanta, Ga.
 HODSDON, Edward E., 1st Lieut., Miami, Fla., Fort Benning, Ga.
 HOLLAND, Ned W., 1st Lieut., New Orleans, Fort Jackson, S. C.
 JOYNER, Rayburn N., 1st Lieut., Marianna, Fla., Fort Bragg, N. C.
 LOVE, Carruthers, 1st Lieut., Memphis, Tenn., Fort Bragg, N. C.
 MARINO, Joseph B., 1st Lieut., New Orleans, Fort Benning, Ga.
 MOSELEY, Charles M. J., 1st Lieut., New Orleans, Fort Benning, Ga.
 MUELLER, Camillo F., Captain, New Orleans, Fort McClellan, Ala.
 PORTER, Arthur R., Jr., 1st Lieut., Memphis, Tenn., Fort Bragg, N. C.
 ROBERTS, Edward H., 1st Lieut., Choctolocco, Ala., Fort Jackson, S. C.
 ROPER, C. James, 1st Lieut., Jasper, Ga., Fort Jackson, S. C.
 SORRELLS, John E., 1st Lieut., Iowa, La., Fort Benning, Ga.
 WILKINS, Samuel B., Jr., 1st Lieut., Athens, Ga., Fort Jackson, S. C.
 WILLIS, Charles A., 1st Lieut., Woodbine, Ga., Fort Benning, Ga.

Orders Revoked

ALLEN, Benjamin L., 1st Lieut., Spartanburg, S. C.
 BARKSDALE, Irving S., Captain, Greenville, S. C.
 BLUM, Joseph E., Jr., 1st Lieut., Greenville, S. C.
 BROOK, Clarence Loe, 1st Lieut., Tusenloosa, Ala.
 CENTER, Abraham H., 1st Lieut., Savannah, Ga.
 DAVIDOFF, Theodore, 1st Lieut., DeRidder, La.
 DAVIS, Frank M., 1st Lieut., Corinth, Miss.
 DUNSTAN, Paul Lane, 1st Lieut., Atlanta, Ga.
 ERWIN, J. W., 1st Lieut., Blountville, Tenn.
 FABBRICANTE, Salvatore, 1st Lieut., Morton, Miss.
 GACHET, Fred Smith, 1st Lieut., Lakeland, Fla.
 GENGELBACH, Robert D., 1st Lieut., Alexandria, La.
 GLEASON, Albert H., 1st Lieut., Umatilla, Fla.
 HARRIS, William T., 1st Lieut., Troy, N. C.
 HICKMAN, Walter B., 1st Lieut., Louisville, Miss.

HOLLOWAY, Charles T., 1st Lieut., Charleston, S. C.
 HOLMES, Verner S., 1st Lieut., McComb, Miss.
 LEVY, Morton Lee, 1st Lieut., Jonesville, La.
 LOVETT, Raymond E., 1st Lieut., New Orleans.
 McEVITT, William G., 1st Lieut., Madisonville, Tenn.
 MARCY, John O., 1st Lieut., Bristol, Tenn.
 MILLER, John Marion, 1st Lieut., Augusta, Ga.
 RAMSEY, Russell Wiest, 1st Lieut., Winter Park, Fla.
 RAWLS, Jack Larche, 1st Lieut., Bastrop, La.
 RHAME, Delmar O., Jr., 1st Lieut., Clinton, S. C.
 SOSKIS, Elbert J., 1st Lieut., Mulberry, Fla.
 TALBOT, Joe Dudley, 1st Lieut., New Orleans.
 TILLMAN, George C., Major, Gainesville, Fla.
 WEINSTEIN, Albert, Major, Nashville, Tenn.
 WEINSTEIN, Bernard M., Captain, Nashville, Tenn.
 WILLIAMS, Harvey McL., 1st Lieut., Aberdeen, Miss.

FIFTH CORPS AREA

The following additional medical reserve corps officers have been ordered to duty by the Commanding General, Fifth Corps Area, which comprises the states of Ohio, West Virginia, Indiana and Kentucky:

ARLOOK, Theodore D., 1st Lieut., Elkhart, Ind., Fort Knox, Ky.
 BOOTH, Thomas E., 1st Lieut., Louisville, Ky., Fort Knox, Ky.
 DOCTER, Luchert, 1st Lieut., Toledo, Ohio, Fort McClellan, Ala.
 DUNN, David D., 1st Lieut., Cleveland, Fort Hayes, Ohio.
 DWORKIN, Harry, 1st Lieut., Cincinnati, Fort McClellan, Ala.
 FARRIS, Jacob T., 1st Lieut., Richmond, Ky., Fort Knox, Ky.
 GLASSMAN, Daniel, 1st Lieut., Charleston, W. Va., Fort Thomas, Ky.
 GUSTAFSON, Milton H., 1st Lieut., Cleveland, Baer Field, Fort Wayne, Ind.
 HERZBERG, Mortimer, Jr., 1st Lieut., Cincinnati, Fort Knox, Ky.
 JASKIEWICZ, Casimir F., 1st Lieut., Huntington, W. Va., Fort Knox, Ky.
 KELLER, Bayard M., 1st Lieut., Cuyahoga Falls, Ohio, Fort Hayes, Ohio.
 KING, G. Arthur, Major, Cincinnati, Fort George G. Meade, Md.
 KNICKERBOCKER, Thomas W., 1st Lieut., Cleveland, Fort Hayes, Ohio.

LAMBER, Chester K., Captain, Indianapolis, Fort Benjamin Harrison, Ind.
 LATTA, John D., 1st Lieut., Jerusalem, Ohio, Fort McClellan, Ala.
 LAWS, Kenneth F., 1st Lieut., Lafayette, Ind., Fort Knox, Ky.
 LESER, Ralph U., 1st Lieut., Indianapolis, Fort Benjamin Harrison, Ind.
 LEYER, Ralph H., 1st Lieut., Hamilton, Ohio, Camp Forrest, Tenn.
 LIGHT, Richard C., 1st Lieut., Lima, Ohio, Fort Knox, Ky.
 McCUNE, Elmer T., 1st Lieut., Sebring, Ohio, Fort Knox, Ky.
 MORRISON, William H., 1st Lieut., Howe, Ind., Fort Knox, Ky.
 O'DELL, Morris H., 1st Lieut., South Charleston, W. Va., Fort Knox, Ky.
 ORT, Milton R., 1st Lieut., Columbus, Ohio, Fort Knox, Ky.
 PASTERAK, Alexander J., 1st Lieut., Indianapolis, Fort Knox, Ky.
 SCHILLER, Herbert A., 1st Lieut., South Bend, Ind., Fort Knox, Ky.
 SCHUNKNEIT, Harold F., 1st Lieut., Mishawaka, Ind., Fort Knox, Ky.
 STANTON, Eugene J., 1st Lieut., Elyria, Ohio, Fort McClellan, Ala.
 STEVENS, Robert H., 1st Lieut., Louisville, Ky., Fort Knox, Ky.
 TATUM, Joseph C., Captain, Lexington, Ky., Fort Hayes, Ohio.
 THOMAS, James J., 1st Lieut., Alliance, Ohio, Fort Knox, Ky.
 TYLER, George P., Jr., Major, Ripley, Ohio, Fort George G. Meade, Md.

NAVY PERSONNEL CHANGES

The Navy Department has announced the following changes in station for officers of the Medical Corps:

ALLEN, Jesse W., Captain, from the Naval Hospital, Annapolis, Md., to Norfolk Naval Hospital, Portsmouth, Va.
 DAVIS, Oscar, Captain, from the Norfolk Naval Hospital, Portsmouth, Va., to the U. S. Naval Academy, Annapolis, Md.
 PORTER, John E., Captain, from the Naval Hospital, San Diego, Calif., to the Navy Dispensary, Long Beach, Calif.

THOMAS, Griffith E., Captain, from the Staff, Commander-in-Chief, Pacific Fleet, to Assistant District Medical Officer, 11th Naval District, San Diego, Calif.
 THOMPSON, George D., Captain, from the Naval Air Station, Anacostia, D. C., to the Naval Air Station, Trinidad, British West Indies.
 WHITEHEAD, Ely L., Captain, from Norfolk Naval Hospital, Portsmouth, Va., to the Naval Hospital, Philadelphia.

ORGANIZATION SECTION

MEDICAL LEGISLATION

DISTRICT OF COLUMBIA

Bills Introduced.—S. 1897, introduced by Senator McCarran, Nevada, proposes to abolish the office of coroner and to establish the office of medical examiner for the District of Columbia. H. R. 5516, introduced by Representative Schulte, Indiana, proposes to permit the importation into the District of Columbia of cream produced and handled in accordance with the provisions of the United States Public Health Service Milk Ordinance.

MEDICAL BILLS IN CONGRESS

Change in Status.—H. R. 5146 has passed the House and Senate, authorizing an additional appropriation for the purchase of a site on which to construct a new building for the Army Medical Library.

Bills Introduced.—H. J. Res. 229, introduced by Representative Bloom, New York, proposes to grant permission to Dr. Hugh S. Cumming, Surgeon General (retired) of the United States Public Health Service, to accept certain decorations bestowed on him by the republics of Colombia, Haiti and Chile. H. R. 5531, introduced by Representative Andresen, Minnesota, proposes to authorize the Secretary of Agriculture to provide rules and regulations for the handling of animals and their products in interstate and foreign commerce when such animals

are known to be infected with infectious, contagious or communicable diseases. H. R. 5535, introduced by Representative Knutson, Minnesota, proposes to amend the Selective Training and Service Act to provide that each member of each local board shall receive as compensation for his services \$5 for each day on which he performs board duties and in addition receive travel expenses at the rate of 5 cents a mile and subsistence expenses while away from his official station on duties of the board. H. R. 5635, introduced by Representative Kennedy, New York, proposes to amend the Selective Training and Service Act to provide that in time of peace any person who has entered on attendance for any academic year (1) at any college or university which grants a degree in arts or science, to pursue a course of instruction satisfactory completion of which is prescribed by such college or university as a prerequisite to either of such degrees; or (2) at any such university to pursue a course of instruction in the pursuit of which a degree in arts or science is prescribed by such university as a prerequisite, and who, while pursuing such course of instruction at such college or university, is selected for training and service under this act prior to the end of such academic year shall, on his request, be deferred from induction into the land or naval forces until the end of the academic year.

WOMAN'S AUXILIARY

California

Members from the San Diego, Riverside and Los Angeles County auxiliaries attended an all day conference of the first and second councilor districts in Los Angeles, April 25. Mrs. A. E. Anderson, state auxiliary president, assisted by Mrs. G. W. Coon and Mrs. Franklin Farman, district councilors, presided. Discussions on how to improve the auxiliary and the auxiliary's most important work were led by Mrs. Coon, Mrs. Ralph M. Smith, Mrs. R. Emerson Bond and Mrs. Ralph B. Eusden. Dr. L. A. Alesen, secretary of the Los Angeles County Medical Association, spoke on the relationship of the auxiliary to the medical association. Medical Information, Please, the San Diego auxiliary's panel discussion plan of presenting a health program, was outlined briefly by Mrs. Bond, quiz leader, and Mrs. E. H. Christopherson, Mrs. Charles Rees and Mrs. Hal G. Kelley, taking the place of doctors around the quiz table. Mrs. Willard Newman of San Diego read her monologue, "The Doctor's Wife at the Telephone."

One hundred and thirty-three members and guests of the Los Angeles County auxiliary gathered in Pasadena to hear Mrs. Thomas G. Winter, head of the Community Service Department of the Motion Picture Producers and Distributors of America, talk on "Pictures and the Political Crisis."

During a luncheon meeting of the San Diego auxiliary, Mrs. E. M. MacKay gave a report of the work done by Dr. Dorothy Smyle, who is director of medical supplies of the British War Relief Association of Southern California.

Florida

At the annual meeting in Jacksonville, April 28-30, of the woman's auxiliary to the state medical society, the president, Mrs. Gordon H. Ira, presided. Mrs. Victor A. Hughes, president of the auxiliary to the Duval County Medical Society, gave the welcoming address. The following officers were installed: Mrs. W. J. Barge, Miami, president; Mrs. F. W. Krueger, Jacksonville, and Mrs. R. L. Cline, Lakeland, vice presidents; Mrs. Paul Kells, Miami, corresponding secretary; Mrs. C. H. Murphy, Bartow, recording secretary-treasurer; Mrs. M. J. Flipse, Miami, historian, and Mrs. L. C. Ingram, Orlando, parliamentarian.

New York

The June meeting of the Columbia County auxiliary was held at the home of Dr. and Mrs. John L. Edwards in Hudson. The president, Mrs. Robert L. Bowerhan of Copake, presided. A letter of appreciation was read from the board of directors of the Physicians Home for the \$10 recently contributed. The sum of \$317 was realized from the dance given by the auxiliary for the benefit of the Hudson branch of Bundles for Britain.

The auxiliary was hostess at a tea given in honor of the graduating class of the school of nursing of the Hudson City Hospital.

On June 24 the Erie County season closed with the annual guest day. Mr. James A. Whitmore, manager of the Buffalo City Planning Association, was the speaker. Mrs. William Rennie was general chairman of the event. There were prizes for golf and cards in the Meadowbrook Golf and Country Club.

Sponsored by the Saratoga auxiliary, a mental health institute was held on May 22 at the Saratoga Springs High School Auditorium. Mrs. T. E. Bullard, president of the auxiliary, introduced Dr. Thomas J. Goodfellow, chairman of the advisory board, who presided. Drs. Frances E. Vosburgh and D. Ewen Cameron were speakers at the evening session, which was attended by 300 persons; Dr. M. D. Duby, vice president of the Saratoga County Medical Society, was chairman. Drs. Kathryn L. Scholtz and Fredrick L. Patry, were the evening speakers.

Wisconsin

At a dinner for 22 members and 4 guests of the Fond du Lac County auxiliary at the home of Mrs. J. J. Sharpe of Fond du Lac in February Mrs. A. W. Hammond of Beaver Dam discussed "Mothercraft." Mrs. Hammond is Mothercraft Chairman of the Wisconsin Federation of Women's Clubs, and also president of the neighboring Dodge County medical auxiliary.

The Rock County auxiliary met on February 25 at Janesville. How the social service department of the Wisconsin Anti-Tuberculosis Association functions was told comprehensively by Miss Meta Bean, Milwaukee, its director in Wisconsin for fourteen years. Mrs. H. E. Gasten, of Beloit, president of the auxiliary, presented the Pinehurst Sanatorium, where the meeting was held, with a picture shower, gifts of the members.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Fellowships in Obstetrics.—The Alabama State Department of Public Health, in cooperation with the Children's Bureau of the U. S. Department of Labor, announces fellowships in public health obstetrics for physicians who have had a minimum of a year's rotating internship and one year of obstetric training. Training provided will embrace field work in already established maternity clinics in rural areas, in the organization of new centers and rotating through the various departments and projects connected with the obstetric aspects of public health. A stipend of \$150 a month plus travel while in the field is provided. Applications should be sent to Dr. James N. Baker, state health officer, Montgomery.

ARKANSAS

Changes in Health Officers.—Dr. Mason G. Lawson, Benton, has been appointed health officer of Miller County, Texarkana.—Dr. Albert S. J. Clarke, Ozark, has been transferred to Monticello to be health officer of Drew County and Dr. Lynwood B. Jones, formerly in Monticello, has been changed to Ozark as health officer of Franklin County.

CALIFORNIA

Changes in Medical School Staff.—The University of California Medical School, San Francisco, announces the following promotions, among others:

David M. Greenberg, Ph.D., to professor of biochemistry.
Dr. Frederic C. Bost, associate clinical professor of orthopedic surgery.
Dr. Keene O. Haldeman, associate clinical professor of orthopedic surgery.
Dr. Daniel G. Morton, associate professor of obstetrics and gynecology.
Dr. Eric Ogden, associate professor of physiology.
Dr. C. Allen Dickey, assistant clinical professor of ophthalmology.
Dr. John M. Graves, assistant clinical professor of dermatology.
Charles Gurchot, Ph.D., assistant professor of pharmacology.
Dr. David O. Harrington, assistant clinical professor of ophthalmology.
Dr. Clayton D. Mote, assistant clinical professor of medicine.
Dr. Charles A. Noble Jr., assistant clinical professor of medicine.
Dr. Frederick G. Novy Jr., assistant clinical professor of dermatology.
Dr. Allan Palmer, assistant professor in obstetrics and gynecology.

CONNECTICUT

Personal.—Dr. Joseph I. Linde, health officer of New Haven, who was appointed to complete the unexpired term of the late Dr. James Stephen Maher on the State Tuberculosis Commission, has now been appointed to a regular term of six years by Governor Hurley.

State Committee on Nutrition.—A state committee on nutrition for national defense has been appointed in Connecticut with Mrs. Marion E. Dakin, nutritionist of the University of Connecticut, Storrs, chairman. Among the members are Drs. David Gaberman, Hartford, and John C. Rowley, West Hartford, and George R. Cowgill, Ph.D., New Haven. Among the committee's objectives will be the organization of local committees throughout the state and the dissemination of educational material.

Dr. Allen Receives Baly Medal.—Edgar Allen, Ph.D., professor and chairman of the department of anatomy, Yale University School of Medicine, New Haven, has been awarded the Baly Medal of the Royal College of Physicians, London, in recognition of his work on estrogens. Dr. Allen was born in Canon City, Colo., in 1892. He received his Ph.D. degree at Brown University, Providence, R. I., in 1921. He was on the staff of Brown University from 1913 to 1917 and investigator for the U. S. Bureau of Fisheries at Woods Hole, Mass., in the summer of 1919 and at Fairport, Iowa, in the summer of 1922. He was instructor and associate in anatomy at Washington University School of Medicine, St. Louis, 1919-1923; professor of anatomy at University of Missouri, 1923-1933, associate dean, 1929-1930, and dean, 1930-1933. He went to Yale as professor in 1933. The medal is awarded on the recommendation of the president and council of the college for work in the science of physiology, especially during the two years immediately preceding the award.

FLORIDA

Chattahoochee Valley Meeting.—Dr. Herbert E. White, St. Augustine, was elected president of the Chattahoochee Valley Medical Association at its forty-first annual meeting in Jacksonville in August, succeeding Dr. Frank K. Boland, Atlanta. Other officers chosen at this time include Drs. David Henry Poer, Atlanta, and Dan C. Donald, Birmingham, Ala., vice presidents, and Robert B. McIver, Jacksonville, secretary-treasurer, reelected. Clinics and papers made up the scientific program. At the annual banquet Dr. Frederick J. Waas, Jacksonville, was toastmaster, and Dr. Clayton E. Royce, Jacksonville, delivered the W. J. Love Memorial Address, entitled "The Approach." Birmingham was selected for the 1942 meeting.

ILLINOIS

District Meeting.—The quarterly meeting of the Iowa-Illinois Central District Medical Association was held in Moline, September 11. Dr. David B. Freeman, Moline, discussed "Epithelioma of the Lower Lip" and Dr. Ralph A. Kinsella, St. Louis, "Endocarditis." Dr. Louis J. Karnosh, Cleveland, will address the meeting in Davenport, Iowa, December 10, on "Radical Methods in the Treatment of Melancholia."

New Divisions in State Health Department.—Because of expanded activities, the state department of health has created the division of public health nursing and the division of maternal and child hygiene, with separate administrative units. This work was formerly carried out in a combined division of child hygiene and public health nursing. The division of public health nursing will be in charge of Miss Maude Carson, R.N., chief supervising nurse, who has been chief supervising nurse in the department since 1936, and Dr. Grace S. Wightman, Springfield, will be chief of the new division of maternal and child hygiene. The latter division will supervise maternity hospitals and promote maternal, infant, child and school health programs, while the division of public health nursing will be responsible for the technical supervision of all nurses employed by the state department, promote the development of local public health nursing services and offer guidance and assistance to local units.

Chicago

Refresher Courses.—The Eye and Ear Research Fund announces a refresher course in the fundamentals (anatomy and pathology) of otorhinolaryngology, which is intended for candidates for the American Board of Otolaryngology. The course will be given at the Illinois Eye and Ear Infirmary and at the Illinois Research and Educational Hospital, Wednesday October 8, from 8 a. m. until 5 p. m. and on October 9-12 during evening hours. A two day course in practical gonioscopy will be given at the infirmary, October 24-26. Additional information may be obtained from Dr. Robert Henner, Illinois Eye and Ear Infirmary, 904 West Adams Street, Chicago.

Argentine Radiologist Honored.—Dr. José A. Saralegui, professor of radiology and physical therapy in the Faculty of Medical Sciences of Buenos Aires and director of the Municipal Institute for Radiology and Physical Therapy, Buenos Aires, was guest of honor at a dinner at the University Club on July 28. Among those present at the dinner were Drs. Hollis Potter, James T. Case, Max Cutler, Benjamin H. Orndoff, Milton G. Schmitt, John S. Coulter, Col. Joseph E. Bastion, medical corps, U. S. Army, and Mr. Brian Doble. Dr. Saralegui is visiting the United States at the invitation of the Department of State. According to information from the department he was a founder of the Argentine Society of Radiology and Electrodia, is chief of radiology and physical therapy in the Rivadavia Hospital, editor of the radiology section of the *Revista de la Asociación Médica Argentina*, and has been secretary of the Argentine Medical Association. He arrived July 14.

IOWA

Professor Retires.—Dr. Andrew H. Woods, since 1928 medical director of the psychopathic hospital and professor and head of the department of psychiatry, State University of Iowa College of Medicine, Iowa City, has retired, having reached the official retirement age.

Personal.—Dr. Ralph H. Heeren has resigned as assistant professor of hygiene and preventive medicine at the State University of Iowa College of Medicine, Iowa City, to accept a similar position at the Tulane University of Louisiana School of Medicine, New Orleans.—Dr. Elmer B. Mountain has been elected president of the American Mutual Life Insurance Company of Des Moines, it is reported.

KENTUCKY

New Health Unit.—Dr. Jack C. Haldeman, recently health officer of Wasco County, Ore., with headquarters in The Dalles, has been appointed to take charge of a new health unit in Christian County.

Society News.—Drs. Joseph E. Hamilton, Louisville, and Alice L. Wakefield, Anchorage, addressed the Jefferson County Medical Society, Louisville, September 15, on "Newer Applications of Peritoneoscopy and a New Instrument to Aid the Procedure" and "Cineplastic Amputation of Right Arm" respectively.—Dr. Rettig Arnold Griswold, Louisville, discussed "Wounds of the Heart" before the Society of Physicians and Surgeons, Louisville, September 18.

MARYLAND

Hospital News.—A new medical library was recently presented to the South Baltimore General Hospital by the Soroptimist Club of Baltimore.—The Veterans Administration Facility at Perry Point held its annual play festival and award day exercises on September 7.

Vaccination Against Tick Fever Urged.—The Baltimore County Health Department urged persons who are likely to encounter ticks to submit to vaccination against tickbite fever, August 16, and simultaneously announced two cases of the fever reported in the county during the week, according to the *Baltimore Sun*. In both instances the patients were boys who frequent wooded areas. They live in opposite ends of the county. Many members of the boys' families were vaccinated against tickbite fever, although none had showed illness at the time of this report, it was said. The health department also announced arrangements with the county roads department for the vaccination of workmen on the roads as a protection to employees who are exposed to ticks in the course of their daily work.

MASSACHUSETTS

Personal.—Lieut. Comdr. James C. White, U. S. Navy Medical Corps, assistant professor of surgery, Harvard Medical School, Boston, recently went to London as medical observer for the Navy, the *New York Times* reported.—Dr. Charles F. Wilinsky, director of Beth Israel Hospital, Boston, received the honorary degree of master of arts from Harvard University, June 19.

Chemist Receives Cancer Award.—Louis F. Fieser, Ph.D., Sheldon Emery professor of organic chemistry, Harvard University, Cambridge, has received the Katherine Berkan Judd prize of the Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York. The prize carries an honorarium of \$1,000. Dr. Fieser is the first American to win the award, it was announced. According to the citation, the prize was awarded for "his outstanding contribution in the proof of the active and inactive positions in the molecules of the chemical carcinogens." Dr. Fieser received his Ph.D. degree at Harvard in 1924 and has been teaching there since 1930.

MICHIGAN

Dr. MacNider Lectures at Michigan.—Dr. William deB. MacNider, Kenan research professor of pharmacology, University of North Carolina School of Medicine, Chapel Hill, delivered three lectures July 29-31, on "Acquired Resistance of Tissue Cells," under the auspices of the department of materia medica and therapeutics of the University of Michigan Medical School, Ann Arbor. The subjects of his lectures were "Repair of Tissue and Tissue Resistance," "The Aging Process and Tissue Resistance" and "The Adjustability of the Life Process to Injurious Agents."

MINNESOTA

Courses for Continuation Study.—*Minnesota Medicine* announces a series of courses to be given during coming weeks at the Center for Continuation Study, University of Minnesota, Minneapolis. In medicine the group includes electrocardiography, September 22-27; diseases of the rectum and colon, September 29-October 4; traumatic surgery, September 29-October 4; radiology of the head and neck, November 3-5; sulfonamide therapy, November 10-12; urology, November 10-12, and diseases of infancy and childhood, December 15-20.

Survey of Maternal Mortality.—The Minnesota State Medical Association and the state board of health are cooperating in a statewide survey of maternal mortality, which started August 1. The survey will consist of field studies of the case histories of all maternal deaths by an obstetrician sent out from the state board of health and an analysis of the case

studies by a committee of physicians. This committee, appointed by the state medical association, is composed of Drs. Russell J. Moe, Duluth, chairman; Jennings C. Litzenberg, Adelbert Louis Dippel and Viktor O. Wilson of Minneapolis; Everett C. Hartley, St. Paul; Robert D. Mussey, Rochester; William H. Rumpf Jr., St. Cloud; William F. Mercil, Crookston, and Byron O. Mork, Worthington. The survey was prompted by recognition of the low maternal death rate now prevailing in Minnesota, according to *Minnesota Medicine*. The state rate for 1940 of 2.2 deaths per thousand live births is the lowest ever recorded and compares with the rate of 6.2 maternal deaths per thousand live births. In this survey, physicians are urged to report immediately to the state board of health all deaths connected with pregnancy.

MISSOURI

New Hospital Commissioner.—Dr. Frank M. Grogan, since 1934 superintendent of City Sanitarium, St. Louis, has been named hospital commissioner of St. Louis. He succeeds Dr. Ralph L. Thompson, who resigned. Dr. Grogan graduated at St. Louis University School of Medicine in 1925.

Dr. Baumgarten Named Secretary of State Society.—Dr. Walter Baumgarten, St. Louis, was elected secretary of the Missouri State Medical Association at a meeting of the council, July 20. He is also editor of the *Journal of the state society*. Mr. Elmer H. Bartelsmeyer is executive secretary.

NEVADA

State Medical Meeting at Elko.—The thirty-eighth annual meeting of the Nevada State Medical Association will be held in Elko, September 26-27, under the presidency of Dr. Henry A. Paradis, Sparks. The speakers will be:

- Dr. Merrill C. Mensor, San Francisco, Tuberculosis of the Long Bones.
- Dr. Nymphus Frederick Hicken, Salt Lake City, Diagnosis and Management of Breast Lesions.
- Dr. Miley B. Wesson, San Francisco, Recent Advances in Urology.
- Dr. Ralph C. Pendleton, Salt Lake City, Some Aspects of Surgical Care.
- Dr. Warren H. Cole, Chicago, Gallbladder Disease.
- Dr. Nelson J. Howard, San Francisco, Acute Diseases and Injuries of Tendons.
- Dr. John Vernon Cantlon, Reno, Ulceration of the Leg.
- Dr. David B. Wilsey, Elko, The Mental Picture in the Climacteric.
- Major Robert A. Bier, M. R. C., U. S. Army, Washington, D. C., The Physician and National Defense.

NEW YORK

Fall Postgraduate Courses.—The council committee on public health and education of the Medical Society of the State of New York announces fall courses arranged for county medical societies. A course on traumatic surgery will be presented before the Steuben County Medical Society, Bath, beginning October 2 and continuing Thursdays until November 13, with the following speakers: Drs. Henry H. Ritter, Carl A. Peterson, Willis W. Lasher, Emmett A. Dooley, Walter D. Ludlum Jr. and Ernest W. Lampe, all of New York. A course on allergy is scheduled for the Medical Society of the County of Queens, October 9 and three succeeding Thursdays, with lectures by Drs. William B. Sherman, Beatrice M. Kesten, Albert Vander Veer and William Cook Spain. The council committee also arranged a lecture for the Medical Society of the County of Westchester, White Plains, September 10, by Dr. Eugene R. Marzullo on "Practical Considerations of Blood Dyscrasias." Another will be given, November 12, by Dr. George H. Roberts Jr., Brooklyn, on "Recent Advances in Therapeutics."

New York City

The Ledyard Fellowship.—Announcement is made of the Lewis Cass Ledyard Jr. Fellowship, which is awarded annually by the New York Hospital and Cornell University Medical College. The fellowship, amounting to approximately \$4,000, will be awarded to an investigator in the fields of medicine and surgery or in any closely related field. Of the amount \$3,000 will be applied as a stipend and \$1,000 for supplies or expenses of the research. Preference will be given to younger applicants who are graduates in medicine and who have demonstrated fitness to carry on original research of high order. The recipient will be required to submit reports of his work either at stated intervals or at the end of the academic year. The research is to be carried on at the New York Hospital and Cornell University Medical College. Applications for the year 1942-1943 should be in the hands of the committee by December 15. They should be addressed to the Committee of the Lewis Cass Ledyard Jr. Fellowship, the Society of the New York Hospital, 525 East Sixty-Eighth Street.

NORTH CAROLINA

Changes in Health Officers.—Dr. Benjamin M. Drake, Kenansville, has resigned as health officer of Duplin County to accept a position in the Moore County health department, it is reported.—Dr. Milner C. Maddrey, health officer of Roanoke Rapids, resigned, July 1, and Dr. Robert M. Bardin, Roanoke Rapids, was appointed to succeed him.

Society News.—Drs. Archibald A. Barron and Lester C. Todd addressed the Mecklenburg County Medical Society, Charlotte, September 16, on "Review of Functions of the Frontal Lobes" and "Allergenic Excitants in Pneumococcic Colds" respectively.—Dr. Bernhard H. Hartman, Asheville, addressed the Buncombe County Medical Society, Asheville, August 18, on "Abdominal Pain in Children."

OHIO

Society News.—Dr. John A. Toomey, Cleveland, addressed the Summit County Medical Society, Akron, September 9, on anterior poliomyelitis.—Dr. Claude E. Forkner, New York, addressed the Academy of Medicine of Cleveland, September 19, on "Diagnosis and Treatment of the Anemias."

Appointments to Industrial Commission Staff.—The following physicians have been appointed to the staff of the State Industrial Commission, according to the *Ohio State Medical Journal*: Drs. James H. Boyer, Hillsboro; Frank T. Sheehan, Benjamin Arnoff, Charles E. Cassaday, Columbus, and Harry Sherman, Warrensville.

PENNSYLVANIA

Society News.—Mr. Harold Fishbein, Kane, addressed the Washington County Medical Society at a meeting at the Nema-colin Country Club, September 10, on "The Nonmedical World—A Diagnosis."—Dr. Charles F. Geschlickter, Baltimore, addressed the Harrisburg Academy of Medicine, September 16, on "Diseases of the Breast."—Dr. Francis T. O'Donnell, Wilkes-Barre, chairman of the child health committee of the Medical Society of the State of Pennsylvania, discussed anterior poliomyelitis and the work of the committee at a meeting of the Dauphin County Medical Society, Harrisburg, September 2.

Philadelphia

Society News.—Dr. Albert C. Furstenberg, Ann Arbor, Mich., was the guest speaker at the inaugural meeting of the Philadelphia County Medical Society, September 17, on "Acute Infections of the Cervical Region." Dr. Louis H. Clerf was installed as president to succeed Dr. Edward L. Bortz.

Dr. Long Visits South America.—Dr. Esmond R. Long, director of the Henry Phipps Institute for the study, treatment and prevention of tuberculosis, is visiting South America on a travel grant awarded by the U. S. Department of State. Dr. Long was invited by the government of Colombia to come to Bogotá as adviser on the building of a tuberculosis hospital and was later invited to Panama, Costa Rica and Venezuela to lecture on tuberculosis.

TENNESSEE

Personal.—Dr. Franklin H. Alley, recently assistant superintendent of the Davidson County Tuberculosis Hospital, Nashville, has been appointed director of the Oakville Sanatorium, Oakville, a Shelby County institution. He succeeds Dr. James A. Price, who recently retired.

Society News.—Drs. Henry M. Carney and Burnett W. Wright, Nashville, addressed the Davidson County Medical Society, Nashville, September 2, on "Carcinoma of the Colon" and "Obstructive Uropathies" respectively.—Dr. Cecil E. Newell, Chattanooga, addressed the Hamilton County Medical Society, Chattanooga, September 4, on "Fibromas of the Ovary."—Speakers at a meeting of the Memphis and Shelby County Medical Society, August 5, included Drs. Carroll C. Turner on "Gonorrheal Myelitis" and Thomas D. Moore on "Serial Pycnography." Both are of Memphis.

TEXAS

Changes in Hospital Superintendents.—The board of control, July 17, announced appointment of the following physicians, among others, as superintendents of state eleemosynary institutions replacing superintendents whose contracts expired August 31: Drs. Aloysius T. Hanretta at Rusk State Hospital, succeeding Morris S. Wheeler; Lewis Barbato, Galveston, at San Antonio State Hospital, succeeding William J. Johnson, and Chester A. Shaw, Rusk, at Big Spring State Hospital, succeeding George T. McMahan.

WASHINGTON

Society News.—Dr. Kyran R. E. Hynes, Seattle, addressed the Spokane County Medical Society, Spokane, September 11, on "Clinical Physiology of Shock."—Drs. Franklin G. Ebaugh, Denver, and Thomas A. C. Rennie, Baltimore, addressed the Pierce County Medical Society, Tacoma, September 9, on "Modern Conceptions of Mental Disorders" and "Psychoneurosis" respectively.

WISCONSIN

Changes in Health Officers.—Dr. Edwin H. Jorris, recently a district health officer with headquarters at Sparta, has been made director of the tuberculosis division in the state department of health, according to the *Wisconsin Medical Journal*.—Dr. Ernest Newman, Wausau, has resigned as director of the health unit of Marathon County to join the U. S. Public Health Service.

New Members of State Medical Board.—Governor Heil recently appointed the following new members of the state board of medical examiners: Drs. Anthony F. Ruffolo, Kenosha; Ernest W. Miller, Milwaukee, and Raymond G. Arveson, Fred-eric, and E. C. Murphy, D.O., Eau Claire. Dr. Henry H. Christofferson, Colby, who was reappointed, is president of the board and Dr. Harold W. Shutter, Milwaukee, is secretary.

District Medical Meetings.—The Second Councilor District Medical Society held a meeting in Racine, August 20, with the following speakers: Drs. Merritt Paul Starr, Chicago, on "Diagnosis and Treatment of Adrenal Insufficiency"; Archibald L. Hoyne, Chicago, "Present Day Treatment of Contagious Diseases," and Herman O. McPheeters, Minneapolis, "Injection Treatment of Varicose Veins and Hemorrhoids."—The Ninth Councilor District Medical Society held its summer meeting at Marshfield, August 21. A clinical meeting was held at St. Joseph's Hospital in the afternoon, and papers were presented in the evening by Drs. Ovid O. Meyer and Carl S. Harper, Madison, on "Treatment of Decompensation of the Heart" and "Menopause Disturbances" respectively.

WYOMING

New Health Unit in Laramie County.—Cheyenne and Laramie County officials have authorized the establishment of a health unit for the county with Dr. Walter S. Kotas, formerly of Greybull, as director. City and county funds will be augmented by the Children's Bureau and the U. S. Public Health Service. The unit was requested by army and public health officials because of the presence of Fort Warren and a new cantonment near Cheyenne, which together have brought fifteen thousand soldiers to the area.

GENERAL

New Medical Director of Bureau of Standards.—Dr. Clifton R. Wallace, formerly industrial surgeon for the Babcock-Wilcox Boiler Works and for the Tidewater Oil Company, Bayonne, N. J., and one time surgical supervisor for the Travelers Insurance Company at New York, has been appointed medical director of the National Bureau of Standards, U. S. Department of Commerce, Washington, D. C. Dr. Wallace graduated at George Washington University School of Medicine, Washington, D. C., in 1907.

Biographic Material on Dr. Rose.—Miss Clyde Schuman, 420 Riverside Drive, New York, is writing a biography of the late Mary Swartz Rose, Ph.D., for many years professor of nutrition at Columbia University, New York, and a member of the Council on Foods and Nutrition of the American Medical Association. Dr. Rose died February 1. Miss Schuman requests letters from persons having notes on Dr. Rose's lectures or comments on her educational and scientific procedures, from those who knew her as a fellow student, from those serving on national and international committees with her, and from friends who may have pertinent information. Miss Schuman states that any material submitted will be promptly copied and returned.

Drug Firms' Contracts with German Firms Terminated.—The U. S. Department of Justice announced on September 5 the filing in the U. S. District Court for the southern district of New York of two complaints and consent decrees, together with an information to which the defendants pleaded *nolo contendere*, as a result of an investigation of the Alba Pharmaceutical Company, Inc., the Bayer Company, Inc., the Winthrop Chemical Company and Sterling Products, Inc., on charges of violating the antitrust laws by restricting markets. Two individuals, Albert H. Dibold and William Weiss, president and chairman, respectively, of Sterling, were also defen-

dants It was alleged that Winthrop and Bayer, subsidiaries of Sterling, had contacts with the German firm of I G Farbenindustrie and its predecessor, Friedrich Bayer, whereby conduct of the Bayer export business outside of the United States was subject to an illegal profit-sharing arrangement It was alleged also that Winthrop Chemical refrained from exporting certain new products to certain foreign markets in return for the exclusive right to market these products in the United States By terms of the consent decrees these agreements are terminated and the products of the American firms are made available to Latin American countries whose source of supply has been cut off Under the original agreement, it was pointed out, many new and important drugs were disclosed to Winthrop Chemical and made available in the United States, but delivery of new processes and products has now ceased because of the war The announcement from the Department of Justice emphasized that Sterling Products has always been a wholly American company and none of the profits from the sale of Bayer aspirin in the United States have been shared with any foreign interest Similarly, none of the domestic American products or activities of the Bayer Company were involved in the relations with the German firm, nor is there any foreign interest in the numerous other subsidiaries of Sterling Products

American Roentgen Ray Society.—The forty-second annual meeting of the American Roentgen Ray Society will be held in Cincinnati at the Netherland Plaza Hotel, September 23-26, under the presidency of Dr William M Doughty, Cincinnati Among the speakers will be

- Dr Gordon E Richards, Toronto, Canada, The Result of Chest Surveys for the Canadian Army
Dr Alfred F Hocker, New York, Two Years of Experience with Million Volt Roentgen Therapy
Dr Stuart W Harrington, Rochester, Minn., Diaphragmatic Hernia
Dr Tom D Spies, Birmingham, Ala., The Manifestations of Vitamin Deficiencies as They Affect the Practice of Roentgenologists
Dr Richard Schatzki, Boston, Roentgen Appearance of Intramural, Extramucosal Lesions of the Gastrointestinal Tract
Dr Byrl R Kirklin, Rochester, Minn., The Meniscus Sign Complex A Pathognomonic Index of Early Ulcerating Cancer of the Stomach
Drs Harold Dabney Kerr and Wayne K Cooper, Iowa City, Radiation Treatment of Pituitary Adenoma
Drs John R Carty, John R Seal and Harold J Stewart, New York, Contributions of Roentgenology to the Diagnosis of Chronic Constrictive Pericarditis
Drs John W Pierson and George J Farber, Baltimore, A Study of Bone Changes Occurring in Congenital Syphilis

Dr John H Lawrence, assistant professor of medicine, University of California Medical School, San Francisco, who is in charge of medical investigations with the cyclotron at the university, will deliver the Caldwell Lecture on Tuesday evening, September 23 The society will also present instruction courses each morning, with five sequential courses and individual courses on radiation physics, therapeutic radiology and diagnostic roentgenology

The Poliomyelitis Situation.—The U S Public Health Service reported September 12 that the incidence of poliomyelitis this year is about 15 per cent higher than that of 1940, which was unusually low, according to the *New York Times* The number of cases reported to the service for the period January 1 to September 1 was 4,611 as compared with 4,059 for the corresponding period of 1940 In 1937, the last year of significantly high incidence, the number of cases for the same period was 5,512 The disease has been concentrated in the Middle and South Atlantic states, with an extension to the Middle West, the distribution showed States reporting more than 15 cases each for the week ended September 6 were New York 71, Pennsylvania 66, Alabama 66, Georgia 49, Tennessee 38, Ohio 33, New Jersey 32, Minnesota 23, Illinois 21, Massachusetts 18, Kentucky 18, Maryland 16, Virginia 15 These figures represented decreases in Georgia, Ohio, Illinois, Massachusetts and Maryland—Officials of Bergen County, N J, considered closing all schools in the county, it was reported September 14, twenty-two districts had already postponed their openings Passaic County schools were to open September 15, it was said New Jersey had 102 cases in August and 46 from September 1 to 12—Ten new cases in New York City September 12 brought the total for the year there to 207 cases, which compared with a normal expectancy of 99, but was not considered an epidemic, it was said—Theaters and other amusement centers were closed in Chattanooga, Tenn, September 12, as 2 new cases brought the total number in the city and Hamilton County since July 1 to 94—The Maryland state health department reported a downward trend in that state, September 10, according to the *Washington Star* There have been 148 cases in the state this year, of which 76 were in Baltimore There have been 19 cases in Prince Georges County, which adjoins the District of Columbia

Public Health Association.—The seventieth annual meeting of the American Public Health Association will be held at the Convention Hall, Atlantic City, N J, October 11-17 The many sectional programs include the following speakers

- Dr Sidney O Levinson, Chicago, Therapeutic Use of Normal Human Plasma and Serum
Dr Raymond Hussey, Baltimore, The State Medical Society's Responsibility in Mental Hygiene
Elmer V McCollum, Ph D, Baltimore, Is There a Need for the Reinforcing of Milk?
Dr Wilson G Smullie and Olga F Jewett, New York, Role of Type XIV Pneumococci in Producing Illness
Dr John E Gordon, Boston and London, Epidemiologic Observations in War Time London
Dr William D Stovall, Madison, Wis, Some Problems in the Diagnosis of Rabies
Drs Leslie T Webster and Jorge Casals Ariet, New York, An Improved Nonvirulent Rabies Vaccine
Drs John R Paul and James D Trusk, New Haven, Conn, Occurrence and Recovery of the Virus of Infantile Paralysis from Water
Pearl L Kendrick, Sc D, Grand Rapids, Mich, Use of Alum Treated Pertussis Vaccine and of Alum Precipitated Combined Diphtheria Toxoid and Pertussis Vaccine for Active Immunization
Vincent DuVigneaud, Ph D, New York, Biotin—A New Member of the Vitamin B Complex
Dr Sidney W Bohls and Vernal Irons Sc D, Austin Tex, Chorio Allantoic Membrane Infection as a Diagnostic Test for Smallpox

One session will be devoted to a discussion of nutrition in national defense The eighth institute on public health education, sponsored by the public health education section of the American Public Health Association, will be held from Saturday to Tuesday Among the speakers will be Drs Estella Ford Warner, Albuquerque, N M, on "Educational Techniques for Nutrition" and Raymond A Vonderlehr, Washington, D C, "Current and Future Programs of Education Regarding Syphilis and Gonorrhea" Many related organizations will hold meetings during the annual session of the public health association Announcement of the Sedgwick Memorial Medal Award will be made Tuesday evening, and presentation of forty year membership certificates will be made at the annual banquet Thursday evening

LATIN AMERICA

New Dean Appointed.—Dr Henri de Bayle, a graduate of the University of Pennsylvania School of Medicine, Philadelphia, class of 1923, has been appointed dean of a new school of medicine at the Central University of Nicaragua, according to the *New York Times*, September 2 Dr de Bayle has served as minister from Nicaragua to the United States

FOREIGN

Personal.—Colonel (Temporary Brigadier) Alexander Hood has been appointed director general of the Army Medical Services, the *British Medical Journal* reports He succeeds Lieutenant Sir William P Macarthur, who retired August 1.

CORRECTION

Physical Fitness.—In the paper on this subject by Jokl and Cluver in *THE JOURNAL*, May 24, page 2384, second column, seven lines from the bottom, the authors stated that their tests in putting the shot were conducted with a weight of 10 pounds, whereas actually they were carried out with a weight of 12 pounds

Government Services

New Naval Hospital at Corpus Christi

A new hospital at the U S Naval Air Station at Corpus Christi, Texas, was dedicated July 1, with Dr. Neil D Buc, Marlin, president of the State Medical Association of Texas, as the principal speaker

Changes in Public Health Service

Dr Deane F Brooke has been commissioned as surgeon in the reserve, U S Public Health Service, effective August 15. The following physicians have been commissioned as assistant surgeons in the reserve: Carl Wiesel, Fort Leonard Wood, Md.; Dean B Jackson, Angola, Ind.; Linden E Johnson, Seattle; Avery B Wight, Seattle; and Eugene K Firms, Newton, Kan

Passed Assistant Surgeon George G Van Dyke has been relieved from duty at Berlin Germany, and directed to proceed to Washington, D C, for duty in the states relations division.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 19, 1941.

Maintenance of Public Services During the Bombing of London

At the County Hall, the home of the London County Council, Mr. Churchill was guest of honor at a luncheon given to the government and the chiefs of the civil defense services. He praised the courage of the Londoners and the inhabitants of other cities under concentrated bombing attacks. No one knew beforehand what would be the result of a concentrated and prolonged bombing of the vast population in the Thames valley, amounting to more than eight million people dependent from day to day on light, heat, power, water, sewerage and communications on the most complicated scale. The administration of London was confronted with problems hitherto unknown in all its history. Public order, public health, the maintenance of all the essential services, the handling of millions of people who came in and out of London every day; shelter—not indeed from bombs, for that was beyond us—but from their blast and splinters; the removal of the dead and wounded from shattered buildings; the care of the wounded when hospitals were being ruthlessly bombed; provision for the homeless, sometimes amounting to many thousands in a single day: these things, with the welfare of great numbers of children, presented tasks which might have seemed overwhelming. Indeed, before the war plans were made to move the government and all the great controlling services from London and disperse them about the countryside. When the storm broke in September, water was cut off, railways were cut or broken, large districts were destroyed by fire, twenty thousand people were killed and many more thousands were wounded. But there was one thing about which there was never any doubt—the courage and unconquerable grit of the Londoners. Without that, all would have failed. All the public services were carried on, and all the intricate arrangements involving the daily lives of so many millions were carried out, improvised, elaborated and perfected in the very teeth of the storm.

Saving Children in Air Attacks

The Minister of Health, Mr. Ernest Brown, has described his recent tour of evacuation and reception areas. Wherever he went he was impressed with the way the people helped one another in time of trouble. The housewives of the safer areas were playing a key part in a great war service, involving heavy sacrifices for the children's sake. We had taken a million and a half women and children away from their homes and families and mixed them with strangers, so that we could hardly expect 100 per cent successes. But we might perhaps call it an 80 per cent success. Anyway a scheme which kept nearly a million children away from the most dangerous areas and had already saved thousands of lives was well worth while. The minister suggested that every one should now arrange with friends or relatives living in another part of the town—if possible not less than half a mile away—to go straight to them if bombed out. If this mutual pact came into operation, a lodging allowance of a dollar for each person would be paid by the local council for the first fortnight in any case, and longer if needed.

Leprosy Control

At the annual meeting of the Leprosy Relief Association Sir Leonard Rogers, F.R.S., emphasized the need to modify the policy of compulsory segregation which leads to the hiding of cases until no longer amenable to treatment. It had been

shown that 80 per cent of infections arise in the households of leprosy patients and that nineteen out of twenty infections are derived from prolonged contact with the more infectious skin type and only one from the nerve type. This led to the release of a third of the patients segregated in South Africa as uninfected and with the spread of the knowledge that most early cases can be effectually treated in less than two decades 4,500, or two thirds of the known patients, largely voluntary admissions, have passed through the new kind of agricultural leper colonies and been released as no longer infective. In badly infected southern Soudan over half the 7,075 patients moved to agricultural colonies have been cleared of all symptoms of active disease. In Nigeria, the most infected of our colonies, the lepers, mostly infectious ones, isolated and treated under a voluntary system in large agricultural colonies, have increased from 2,500 to 7,000. In British Guiana the government has modified the compulsory isolation law to permit persons with early involvement to be treated at dispensaries. Little progress had been made in the last few years in discovering a curative treatment for all stages of the disease. But a new oil, closely resembling the effective *hydnocarpus* oil in chemical formula, was now being tested. Progress was most likely on such chemotherapeutic lines.

Invalids and Bread Fortified with Calcium

The Medical Research Council has issued a statement of the effect on invalids of bread made from flour fortified by the addition of calcium salts. The exigencies of the war have forced on the people of this country a diet which requires a supplement of calcium salts for the maintenance of health. The Ministry of Food asked the advisory committee of the council whether the addition of small supplements of calcium salts to flour would in any way be deleterious to invalids. The committee's reply was that there is neither medical nor scientific evidence that bread made from flour fortified with calcium is harmful in any type of disease.

It has been proposed that 14 ounces of calcium carbonate be added to 280 pounds of 85 per cent extracted flour and 7 ounces to white flour. Thus each pound of the fortified former flour and 2 pounds of the latter flour would contain slightly less calcium than a pint of milk. There is therefore no danger that invalids will consume harmful amounts of calcium. It has been suggested that calcium might have a harmful effect because it is in the form of carbonate, which is different from the form naturally in food. This criticism appears to be ill founded. There is direct evidence, obtained on human beings, that calcium carbonate is as available to the body as calcium phosphate. In an easily assimilable food, such as milk, calcium is in combination with phosphoric acid, a common normal component of animal tissues; in calcium carbonate, calcium is also present as the salt of an acid of widespread occurrence in living tissues. In both cases the calcium is split off from the acid during the process of digestion and is absorbed into the body in the same form in each case.

A Method of Administering Ether

At the Nuffield Department of Anesthetics, University of Oxford, a new device for the administration of ether, known as the Oxford vaporizer, has been perfected. Its principle turns to account the physical phenomenon of latent heat to vaporize ether when administered. No satisfactory method of doing this had previously been devised. The jacket of warm water used around Boyle's bottle is unwieldy, as the initial temperature of the water must not exceed 34 C., the boiling point of ether. In the new vaporizer there is a chamber containing crystals of calcium chloride and a hot water chamber to melt these. When some of the ether evaporates, the requisite heat is supplied by the molten crystals, which then recrystallize.

The recrystallization continues and supplies the heat to the ether at a constant temperature a little below the boiling point of ether as long as heat is abstracted by further evaporation of the ether. The latent heat of crystallization of the calcium chloride is used as a reservoir which supplies heat at a constant temperature. Thus a constant supply of concentrated ether vapor is available. This may be diluted to any desired strength by a calibrated mixing tap.

Increase of Food Rationing: Supplies Well Maintained

Lord Woolton, minister of food, has announced that he proposes to bring more and more foods under control and to restrict their distribution to the most economic lines. He had come to the end of the commodities he could ration on the present basis with two exceptions. One was bread, which he hoped he never would have to ration; the other was milk. He would try an experiment in rationing eggs. They were most difficult to handle because he did not have control of the supplies brought for sale by the home producer. He could no longer tolerate the uneven distribution of eggs. He would give priority to children and invalids. He would probably require consumers to register for eggs at one shop only. He would completely control the distribution and price of fish. Food prices had been held down for all major commodities; imports of wheat would continue without increase of price at the port of shipment for at least twelve months. We could see twelve months ahead with no doubt of maintaining our bread and meat supplies at the present level. Even in towns and ports which had been subjected to enemy action, food supplies had been maintained. We had come through the winter and nationally were quite healthy. We had survived twenty months of war, and our food supplies were as secure as they were twelve months before.

Sir William Willcox

The death of Sir William Willcox has removed a well known physician and the leading toxicologist of his day. He was educated at St. Mary's Hospital and after a distinguished career as a student was elected to the staff in 1907 and about this time became a junior analyst to the government. His senior was the toxicologist Sir Thomas Stevenson, whom he succeeded. He became well known by his evidence in many cases in which poisoning was the charge, and the lawyers employed by the defense always failed to upset his well prepared evidence. Perhaps the most remarkable was the Crippen case, in which the murderer made the fatal mistake of using quicklime when he buried the remains in a cellar. This preserved them, and Willcox was able to find scopolamine. For thirty years he was lecturer on chemical pathology at St. Mary's Hospital and for nearly the same period lecturer on forensic medicine. His occupation with toxicology and forensic medicine did not prevent him from being in the front rank as a general physician but, as might be expected, it was the chemical side of medicine which most attracted him. He was always thorough and cautious. When the barbiturates came into fashion he was never tired of warning against their indiscriminate use. His favorite medium for teaching was the lecture table. The most important of his writings were "Diseases of the Stomach" in the Dictionary of Practical Medicine; "Arthritis" and "Toxicology" in Price's Textbook of Medicine; "The Treatment of Diabetes with Special Reference to Insulin," in the *Practitioner*, and his Lumleian lectures on "Toxic Jaundice" in 1931. He was master of the Society of Apothecaries and president of the great London medical societies.

RIO DE JANEIRO

(From Our Regular Correspondent)

July 20, 1941.

The Use of Sulfanilamide by Arterial Injection

The use of arterial injections for therapeutic purposes was tried by Goyanes in 1908; in the war of 1914-1918 antitetanic serum was injected into the carotid, but only after the experiences of Portuguese clinicians was the arterial method adopted in Latin countries. Many articles were written showing excellent results from the arterial administration of antiseptic solutions in some disorders of the limbs. In Brazil, six years ago, Armenio Boreli of Rio de Janeiro proposed the use of microbial vaccines arterially. The method was quickly taken up in our principal medical centers as an excellent means to combat infections of the extremities.

Having in view the good results of intra-arterial injections and the well known effects of sulfanilamide in many infections, Eurico Branco Ribeiro of São Paulo used the drug in this manner in several disorders of the extremities. His large experience was referred to in recent papers read before medical societies by him and his collaborators, Drs. Paulo G. Bressan and José Saldanha Faria. Sulfanilamide has advantages in relation to other antiseptic substances. This drug does not cause local endarteritis, as some others do.

The technic of application is simple. The artery is fixed between the middle and index fingers of the left hand. With the right hand the needle is introduced into the artery and immediately a column of red blood appears in the syringe at every pulsation. The injection can then be made, not too quickly. The needle does not have such a narrow caliber. When the needle has a large caliber, as in needles employed for oil injection, it is easy to recognize that the artery has been reached.

Among the conditions that can be improved by this method, Ribeiro mentions pyoarthritis, lymphangitis, angiophlebitis, cellulitis, pyodermatitis, erysipelas, folliculitis, furunculosis, abscess, varicose ulcers, tropic ulcers, acute osteomyelitis and infected wounds. In chronic osteomyelitis and in other chronic infections the effects are not so good. For prophylactic purposes, intra-arterial sulfanilamide has a wide application in many traumatic conditions to avoid suppuration or even tetanus.

Personal

The Faculty of Medicine of the University of São Paulo has a new director, Prof. Benedicto Montenegro, who is a famous Brazilian surgeon. He was born in São Paulo but took his medical course in the United States. His work on peptic ulcer is well known. He created in São Paulo a school of surgeons whose members are contributing to the rapid progress of surgery in that region.

Marriages

JERE ROBERT DOWNING, Kennebunk, Maine, to Miss Leta Marr of Asheville, N. C., in Durham, N. C., July 5.

HENRY LAWRENCE SMITH JR., Wallingford, Pa., to Miss Juliet Seeley Bacon of Danbury, Conn., August 2.

GEORGE KING LOOSER, New York, to Miss Catherine Louise Pommerer of Grand View, N. Y., July 12.

ARTHUR ILLGES CHENOWETH, New York, to Miss Barbara Mary Derr of Wilmington, Del., July 2.

WINFIELD E. STUMPF, Forest Hills, N. Y., to Miss Margaret Lewerth of New York, August 1.

PHILLIP SAUL BAZAR to Miss Helen Louise Bowers, both of Montgomery, Ala., in July.

TRUMAN W. BROPHY III to Miss Edna Louise Colbert, both of San Francisco, in August.

PHILIP J. CLARK, Fond du Lac, Wis., to Miss Pauline Berge of Beloit, June 14.

Deaths

Arthur Roosevelt Bowles ☉ Chicago; Yale University School of Medicine, New Haven, Conn., 1931; received his bachelor's degree from Columbia University, New York, in 1927; served a two year medical internship at the New Haven Hospital and a one year pediatric internship at the Strong Memorial Hospital, Rochester, N. Y.; during the winter of 1934-1935 studied hospital administration at the University of Chicago on a Rosenwald fellowship; from 1935 to 1937 was assistant director and during 1937 and 1938 acting director of the Grasslands Hospital, Valhalla, N. Y.; since October 1939, hospital inspector on the staff of the Council on Medical Education and Hospitals of the American Medical Association; aged 35; died, September 3, in the City Hospital, Indianapolis, of malignant hypertension with nephritis.

Henry Joachim ☉ New York; Cornell University Medical College, New York, 1904; fellow of the American College of Physicians; past president of the Medical Society of the County of Kings; clinical professor of medicine at the Long Island College of Medicine from 1918 to 1931; served in various capacities and for many years on the staffs of the Cumberland Hospital, Jewish Sanitarium and Hospital of Chronic Diseases, Greenpoint Hospital, St. Catherine's Hospital, Israel Zion Hospital, Beth Moses Hospital and the Long Island College Hospital, Brooklyn; in 1937 was appointed member of the state industrial council; author of "Practical Diagnosis and Treatment"; aged 58; died, August 18, of intestinal carcinoma.

Ralph Nelson Greene ☉ Coral Gables, Fla.; Memphis (Tenn.) Hospital Medical College, 1904; member of the American Neurological Association; medical director of the Eastern Air Lines; was medical consultant for Pan American Airways; past president of the Florida Medical Association; formerly state health officer; at one time on the staff of the Florida State Hospital, Chattahoochee; served during the World War; aged 57; died, August 1, in a hospital at Miami of coronary occlusion.

Samuel Solomon Gidding ☉ Wildwood, N. J.; Jefferson Medical College of Philadelphia, 1934; lieutenant, junior grade, of the United States Naval Reserve, called to active duty Jan. 24, 1941; served with the first marine division of the fleet marine force at Quantico, Va., Guantanamo Bay, Cuba and Parris Island, S. C.; was clinical assistant in pediatrics at his alma mater; on the staff of the Atlantic Shores Hospital, Somers Point; aged 31; died, August 12, of lymphosarcoma.

Kate Breckenridge Bogle Karpeles ☉ Washington, D. C.; Johns Hopkins University School of Medicine, Baltimore, 1914; past president of the Medical Women's National Association and the Women's Medical Society of the District of Columbia; contract surgeon with the United States Army during the World War; assistant professor at the University of Maryland, College Park; aged 53; associate in medicine at the Garfield Memorial Hospital, where she died, August 15, of lymphosarcoma.

George Parrish, Los Angeles; Missouri Medical College, St. Louis, 1894; member of the California Medical Association; since 1924 health officer of Los Angeles; health commissioner of Portland, Ore., from 1917 to 1924; past president of the Portland City and County Medical Society; past president of the Oregon State Health Officers' Association; aged 69; died, August 7, in the Glendale (Calif.) Sanatorium.

Scott Dudley Breckinridge ☉ Lexington, Ky.; Georgetown University School of Medicine, Washington, D. C., 1907; past president of the Fayette County Medical Society; served during the World War; on the staffs of the Good Samaritan Hospital and St. Joseph's Hospital; co-author with Dr. Edward M. Parker of "Surgical and Gynecological Nursing"; aged 59; died, August 1, of carcinoma of the colon.

William Buckley Peek ☉ Freeport, Ill.; Rush Medical College, Chicago, 1897; fellow of the American College of Surgeons; founder and managing director of the Inter-State Postgraduate Medical Association of North America since its inception in 1916; formerly on the staffs of St. Francis Hospital and the Deaconess Hospital; aged 70; died, August 20, of coronary heart disease.

Elmer Ellsworth Kimmel, Columbus, Ohio; Hahnemann Medical College and Hospital of Philadelphia, 1905; member of the Ohio State Medical Association; veteran of the Spanish-American and World wars; formerly Montgomery County coroner; for many years connected with the state industrial commission; aged 67; died in August at the White Cross Hospital.

Harry Perry Engle ☉ Newton, Iowa; State University of Iowa College of Medicine, Iowa City, 1898; member of the American Academy of Ophthalmology and Oto-laryngology; formerly secretary of the Jasper County Medical Society; aged 68; died, August 5, in the Mary Frances Skiff Memorial Hospital of cerebral hemorrhage and prostatic hypertrophy.

W. Myers Hunter ☉ Charlotte, N. C.; Georgetown University School of Medicine, Washington, D. C., 1905; member of the American Academy of Pediatrics; past president of the North Carolina Pediatric Society; on the staffs of the Mercy Hospital, the Presbyterian Hospital and the Charlotte Memorial Hospital; aged 58; died, August 4.

James Harold Collins, Memphis, Tenn.; George Washington University School of Medicine, Washington, D. C., 1915; member of the Tennessee State Medical Association; formerly professor of physiology and pharmacology at the University of Tennessee College of Medicine; aged 56; died, August 5, in St. Joseph's Hospital.

Harry Clarkson Cunningham, Carman, Man., Canada; Queen's University Faculty of Medicine, Kingston, Ont., 1885; L.R.C.P., Edinburgh, L.R.C.S., Edinburgh, and L.R.F.P.&S., Glasgow, 1887; fellow of the American College of Surgeons; on the staff of the Carman General Hospital; aged 77; died, July 2, of cerebral hemorrhage.

Henry Barr Ingle ☉ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1902; served during the World War; on the staff of the National Stomach Hospital; at one time medical superintendent of the Diagnostic Hospital; aged 63; died, August 10, in the United States Naval Hospital of myocarditis.

Herbert Payne Fisher ☉ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1896; at one time associate professor of medical and physical diagnosis, Temple University School of Medicine; aged 69; died, August 5, in the City Hospital, Atlantic City, N. J., of perforated gastric ulcer and peritonitis.

William Hinkle Massey ☉ Surgeon Lieutenant Commander, United States Navy, retired, Peoria, Ill.; Cooper Medical College, San Francisco, 1912; entered the navy Aug. 17, 1914 and retired June 14, 1923 for incapacity resulting from an incident of service; served during the World War; aged 55; died, August 16.

Joseph Robert Kuth ☉ Duluth, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1904; member of the Clinical Orthopedic Society and the American Academy of Orthopedic Surgeons; aged 60; on the staffs of St. Luke's Hospital and St. Mary's Hospital, where he died, August 1, of leukemia.

Charles Joseph Swan, Evanston, Ill.; Hahnemann Medical College and Hospital, Chicago, 1890; Northwestern University Medical School, Chicago, 1909; fellow of the American College of Surgeons; served during the World War; formerly on the staff of the Evanston Hospital; aged 76; died, August 6, of coronary occlusion.

Lawrence Edward Growney ☉ Kansas City, Kan.; Creighton University School of Medicine, Omaha, 1923; county coroner; formerly county health officer; lieutenant commander in the United States Naval Reserve; served during the World War; aged 46; died, August 9, in St. Margaret's Hospital of pneumonia.

Ralph Kaysen ☉ San Diego, Calif.; Milwaukee Medical College, 1907; fellow of the American College of Surgeons; colonel in the United States Army Reserve Corps; aged 56; attending orthopedic surgeon, Mercy Hospital, San Diego, and the Scripps Memorial Hospital, La Jolla, where he died, August 4.

Isadore Kaufman ☉ Philadelphia; University of Virginia Department of Medicine, Charlottesville, 1904; fellow of the American College of Physicians; consultant, pulmonary diseases, Abington (Pa.) Memorial Hospital; visiting physician, White Haven (Pa.) Sanatorium; aged 59; died, August 11.

Frank Jasper Runyon ☉ Clarksville, Tenn.; University of Louisville (Ky.) Medical Department, 1884; Bellevue Hospital Medical College, New York, 1885; past president of the Montgomery County Medical Society; on the staff of the Clarksville Hospital; aged 78; died, August 6, of angina pectoris.

Daniel David Murphy ☉ Amesbury, Mass.; Dartmouth Medical School, Hanover, N. H., 1891; on the staff of the Anna Jacques Hospital, Newburyport, and the Amesbury Hospital; aged 77; died, August 8, in the Peter Bent Brigham Hospital, Boston, of heart disease.

Gerald Blake • Brookline, Mass.; Harvard Medical School, Boston, 1905; for many years physician at the Massachusetts General Hospital and consulting physician at the Massachusetts Charitable Eye and Ear Infirmary, Boston; aged 60; died, July 28, of coronary thrombosis.

Frank M. Gipple, Williamsville, N. Y.; University of Buffalo School of Medicine, 1880; member of the Medical Society of the State of New York; aged 87; died, July 29, in the Buffalo General Hospital of cerebral hemorrhage, arteriosclerosis and bronchopneumonia.

Olin Everett Farley • New York; McGill University Faculty of Medicine, Montreal, Que., Canada, 1915; served with the Canadian Army during the World War; on the staff of the Manhattan Eye and Ear Hospital; aged 49; died, August 5, of heart disease.

Edward John Ballou, Buffalo; Cornell University Medical College, New York, 1910; member of the Medical Society of the State of New York; for many years member of the city health department; aged 54; died, July 30, of cerebral hemorrhage and arteriosclerosis.

Frank Wesley Gavin, Canton, Ohio; Bellevue Hospital Medical College, New York, 1894; formerly county coroner; past president of the medical staff of the Aultman Hospital; aged 69; died, August 12, in the Molly Stark Sanatorium of pulmonary tuberculosis.

William Leighton Tracy • Pittsfield, Mass.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1908; fellow of the American College of Surgeons; on the staff of the Hillcrest Hospital; aged 66; died, August 2, of a self-inflicted bullet wound.

Robert Allen Webster, Clyde, Texas; National University of Arts and Sciences Medical Department, St. Louis, 1916; member of the State Medical Association of Texas; aged 50; died, July 30, in the Hendrick Memorial Hospital, Abilene, of coronary thrombosis.

Jack Bertolette Zerbee, Easton, Md.; George Washington University School of Medicine, Washington, D. C., 1920; member of the Medical and Chirurgical Faculty of Maryland; on the staff of the Emergency Hospital; aged 45; died, July 31, of cerebral hemorrhage.

Elmore Le Roy Steele, Akron, Ohio; University of Western Ontario Medical School, London, Ont., Canada, 1914; member of the Ohio State Medical Association; served during the World War; aged 50; died, August 2, in the People's Hospital.

De Witt S. Floyd, Danville, Ky.; Kentucky School of Medicine, Louisville, 1898; member of the Kentucky State Medical Association; aged 69; died, August 1, in the Danville and Boyle County Hospital of injuries received in a train accident.

Gilbert Albertus Foote, Dexter, N. Y.; University of the City of New York Medical Department, 1887; member of the Medical Society of the State of New York; for many years health officer; aged 82; died, August 17, of angina pectoris.

Irving Delbert Cole, Clarksburg, W. Va.; College of Physicians and Surgeons, Baltimore, 1908; member of the West Virginia State Medical Association; past president and secretary of the Harrison County Medical Society; fellow of the American College of Surgeons; aged 60; died, August 10.

John P. Conn, Monticello, Miss.; Medical Department of Tulane University of Louisiana, New Orleans, 1897; member of the Mississippi State Medical Association; member of the state legislature; aged 71; died, August 6, in Jackson.

Rufus L. Cone, Statesboro, Ga.; Maryland Medical College, Baltimore, 1904; member of the Medical Association of Georgia; mayor; on the staff of the Bulloch County Hospital; aged 62; died, July 30, of cardiorenal vascular disease.

George William Tully, Southbridge, Mass.; Tufts College Medical School, Boston, 1912; member of the Massachusetts Medical Society; on the staff of the Harrington Memorial Hospital; aged 52; died, July 21, of coronary thrombosis.

Deyo Palmer Mathewson, Bath, N. Y.; University of the City of New York Medical Department, 1891; at one time health officer; formerly medical superintendent of the Pleasant Valley Sanitarium; aged 72; died, August 19.

Charles William Hartloff, Evansville, Ind.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1897; for many years on the staff of the Deaconess Hospital; aged 71; died, August 1, of diabetes mellitus.

Emmet Bascom Koger, Miami, Fla.; Medico-Chirurgical College of Philadelphia, 1899; Tennessee Medical College, Knoxville, 1900; for many years member of the city health department; aged 67; died, August 14.

Lewis Hertz Lippman, Chicago; Chicago College of Medicine and Surgery, 1913; member of the Illinois State Medical Society; aged 53; died, August 9, in St. Mary's Hospital, Kankakee, Ill., of coronary thrombosis.

John Raymond Sackrider, Santa Barbara, Calif.; University of Buffalo School of Medicine, 1902; served during the World War; aged 63; died, August 4, in the Santa Barbara Cottage Hospital of multiple myeloma.

James Cantine Coles, Ellenville, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1896; Dunham Medical College, Chicago, 1898; health officer of Ellenville; aged 67; died, August 2.

Frank W. McHugh, Ontonagon, Mich.; Milwaukee Medical College, 1903; member of the Michigan State Medical Society; on the staff of the Ontonagon Hospital; aged 69; died, August 1, of coronary thrombosis.

Katharine Brainerd Rich, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1901; aged 77; died, August 14, in Henrotin Hospital of cerebral hemorrhage.

Isaac Shirk Simons • Lancaster, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1914; for many years on the staff of St. Joseph's Hospital; aged 60; died, August 3, of coronary occlusion.

Roy Demas Young, Arlington, Mass.; Columbia University College of Physicians and Surgeons, New York, 1898; member of the Massachusetts Medical Society; aged 69; died, July 25, of coronary thrombosis.

Jacob Alex Shields, LaFayette, Ga.; Chattanooga (Tenn.) Medical College, 1903; member of the Medical Association of Georgia; chairman of the county board of health; aged 65; died, July 29, of cerebral thrombosis.

Lionel Alexander Burnet Street, Los Angeles; Tufts College Medical School, Boston, 1898; physician to the court of Siam from 1911 to 1913; aged 71; died in July of an overdose of morphine, self administered.

Lionel Charles Hutson, Bridgeton, Barbados, British West Indies; McGill University Faculty of Medicine, Montreal, Que., Canada, 1914; served with the Canadian Army during the World War; aged 50; died recently.

Frank Jones Bevan, Forest Hills, N. Y.; Long Island College Hospital, Brooklyn, 1911; aged 65; died, August 11, in the Lutheran Hospital, New York, of adenocarcinoma of the rectum and carcinomatosis.

Albert Sidney Pugh, Grove Hill, Ala.; Kentucky School of Medicine, Louisville, 1892; member of the Medical Association of the State of Alabama; aged 71; died, August 9, of carcinoma of the stomach.

Jesse A. Slocumb • Plainview, Minn.; College of Physicians and Surgeons of Chicago, 1895; past president of the Wabash County Medical Society; aged 68; died, July 3, of coronary thrombosis.

John Linton Joseph Valley, Chicago; Northwestern University Medical School, Chicago, 1910; on the staffs of the Augustana and Edgewater hospitals; aged 73; died, August 7, of coronary sclerosis.

Joseph Lewis Allen, Loretto, Ky.; Kentucky School of Medicine, Louisville, 1903; member of the Kentucky State Medical Association; aged 65; died, August 12, in St. Joseph's Infirmary, Louisville.

Ellison Holmes Williamson, Soso, Miss.; Medical Department of Tulane University of Louisiana, New Orleans, 1909; served during the World War; aged 60; died, July 26, of coronary thrombosis.

William Orson Ellsworth, Austinburg, Ohio; Western Reserve University Medical Department, Cleveland, 1885; formerly county coroner and member of the school board; aged 80; died, August 1.

Fred Ernest Simalar, Brooklyn, Iowa; University of Missouri School of Medicine, Columbia, 1909; member of the Iowa State Medical Society; aged 62; died, August 15, of carcinoma of the prostate.

Edward Samuel Blair, Wayne, Neb.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1887; member of the Nebraska State Medical Association; aged 84; died, August 7.

Wesley L. Furste, Cincinnati; Medical College of Ohio, Cincinnati, 1905; member of the Ohio State Medical Association; physician for Xavier University; aged 57; died, July 28, in Biloxi, Miss.

George Jennings, Buhl, Idaho; Eclectic Medical University, Kansas City, Mo., 1914; served during the World War; aged 54; died, August 4, at Twin Falls of cerebral hemorrhage.

Guy Allen Shaw, Loreauville, La.; College of Physicians and Surgeons, Baltimore, 1890; member of the Louisiana State Medical Society; aged 72; died, July 23, of coronary sclerosis.

Elmer E. Church, Enid, Okla.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1901; aged 78; died, August 4, of coronary occlusion.

Joel Reading Holliday, Oklahoma City; Barnes Medical College, St. Louis, 1907; member of the Oklahoma State Medical Association; aged 62; died, August 7, in Dalhart, Texas.

Mozart Monae-Lesser, New York; Columbia University College of Physicians and Surgeons, New York, 1899; aged 62; died, August 8, in Roslyn, N. Y., of carcinoma of the liver.

Ida B. Pasternack, Passaic, N. J.; New York Medical College and Hospital for Women, New York, 1915; aged 48; died, August 9, in Kamloops, B. C., Canada, of a brain tumor.

Albert John Atwood, Townsend, Mass.; Homeopathic Hospital College, Cleveland, 1885; aged 82; died, July 29, in the Burbank Hospital, Fitchburg, of carcinoma of the pancreas.

Jane Catherine Hughes Sullivan, Mankato, Minn.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1902; aged 65; died, July 29, of coronary heart disease.

Charles Mark Freeman, Ada, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1887; aged 78; died, July 28, of arteriosclerosis and heart disease.

Benjamin Franklin Holliday, Parkdale, Ark. (licensed in Arkansas in 1903); aged 81; died, August 17, in a hospital at Vicksburg, Miss., of cerebral hemorrhage and hypertension.

Thorleif T. Naac, Graettinger, Iowa; Keokuk Medical College, College of Physicians and Surgeons, 1900; member of the Iowa State Medical Society; aged 79; died in August.

John Fred Huey, Birmingham, Ala.; College of Physicians and Surgeons, Baltimore, 1887; member of the Medical Association of the State of Alabama; aged 75; died, August 14.

Isidore M. Lashinsky, New York; Fordham University School of Medicine, New York, 1919; member of the Medical Society of the State of New York; aged 53; died, July 19.

Barbara Jane Harris Leitchhammer, Drexel Hill, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1940; aged 28; died, August 3, in a sanatorium at Allenwood.

George Washington Davis, Bessemer, Ala.; Howard University College of Medicine, Washington, D. C., 1925; aged 44; died, July 27, in St. Mary's Hospital, Detroit.

Richard Frank McKaig, Yoncalla, Ore.; College of Physicians and Surgeons, Keokuk, Iowa, 1894; aged 74; died, August 2, in the Sacred Heart General Hospital, Eugene.

Le Roy Gibbons Smith @ Mandan, N. D.; Saginaw (Mich.) Valley Medical College, 1901; aged 63; was killed, July 9, when his car struck a bridge abutment.

Albert L. Taylor, Brownwood, Texas; Memphis (Tenn.) Hospital Medical College, 1889; member of the State Medical Association of Texas; aged 75; died, July 19.

Joseph James Wymer @ New Orleans; Medical Department of Tulane University of Louisiana, New Orleans, 1906; aged 61; died, August 9, in Waveland, Miss.

Herman Duane Brown, Jackson, Mich.; Detroit College of Medicine, 1899; served during the World War; aged 63; died, August 11, of carcinoma of the kidney.

Alice May Parsons, Chicago; Rush Medical College, Chicago, 1933; aged 44; died, August 12, in the Chicago Memorial Hospital of chronic rheumatic heart disease.

Eugene Swayne, Philadelphia; Medico-Chirurgical College of Philadelphia, 1905; veteran of the Spanish-American and World wars; aged 67; died, August 14.

Tausbee Beckham Beatty @ Margaretville, N. Y.; Hahnemann Medical College and Hospital of Philadelphia, 1936; aged 31; died, August 7, in Beattyville, Ky.

Malcolm Campbell MacKinnon @ Aberdeen, Idaho; Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1909; aged 59; died, August 10.

Harry Hallowell Sellers, Minneapolis; Baltimore Medical College, 1893; served during the World War; aged 71; died, August 15, in the Swedish Hospital.

John Henry Schuck, Colfax, Ind.; Hospital College of Medicine, Louisville, Ky., 1889; aged 78; died, August 8, in St. Elizabeth's Hospital, Lafayette.

Charles Summer Davis, Champaign, Ill.; Eclectic Medical Institute, Cincinnati, 1890; served during the World War; aged 75; died, July 31, of heart disease.

John M. Brown, Maysville, Mo.; Trinity Medical College, Toronto, Ont., Canada, 1888; aged 83; died, July 1, of cerebral hemorrhage and arteriosclerosis.

John Clifton Goudebeck, New Albany, Miss.; University of Nashville (Tenn.) Medical Department, 1910; aged 58; died, July 24, of coronary thrombosis.

George A. Armstrong, Utica, N. Y.; University of the City of New York Medical Department, 1884; aged 82; died, August 9, of paralysis agitans.

Eugene C. Lindsey, Florence, Ala.; Vanderbilt University School of Medicine, Nashville, Tenn., 1895; aged 67; died, August 2, of heart disease.

Harry Dabot Gafney, Ware, Mass.; Harvard Medical School, Boston, 1903; aged 61; died, July 30, of cirrhosis of the liver and myocarditis.

John G. Barger, Indianapolis; Central College of Physicians and Surgeons, Indianapolis, 1900; aged 77; died, August 4, of coronary occlusion.

Bailis S. Stokes, Delight, Ark.; University of Arkansas School of Medicine, Little Rock, 1902; aged 72; died, July 19, of cerebral hemorrhage.

Archibald Milton Campbell @ Lansing, Mich.; Detroit College of Medicine, 1898; aged 72; died, August 17, of carcinoma of the stomach.

John I. Higgs, East St. Louis, Ill.; Missouri Medical College, St. Louis, 1885; aged 81; died, July 15, in Sparta of coronary occlusion.

Wilbur Nathan Hunt, Burlington, Wash.; Iowa Medical College, Eclectic, Des Moines, 1883; aged 84; died, July 20, of paralysis agitans.

Oscar Luzerne Corliss, Belchertown, Mass.; University of Vermont College of Medicine, Burlington, 1881; aged 86; died in August.

Oliver Fletcher Best @ Providence, R. I.; University of the City of New York Medical Department, 1889; aged 79; died in August.

James Whitaker West, Live Oak, Fla.; Vanderbilt University School of Medicine, Nashville, Tenn., 1905; aged 62; died, July 9.

William W. Gourley, Fulton, Ky.; Missouri Medical College, St. Louis, 1887; aged 85; died, August 12, of cerebral hemorrhage.

William M. Walden, Newburgh, Ind.; Louisville (Ky.) Medical College, 1886; aged 79; died, July 24, of hypostatic pneumonia.

Russell Edgar Hartry, Fort Francis, Ont., Canada; University of Toronto Faculty of Medicine, 1914; aged 53; died, August 7.

Raphael Smith Olsen, Lakeside, Ore.; College of Physicians and Surgeons, Baltimore, 1913; aged 56; died, August 11.

Vilroy Molby Connelly, Minneapolis; Barnes Medical College, St. Louis, 1902; aged 83; died, July 28, of heat prostration.

John F. Manning, Los Angeles; Medical School of Maine, Portland, 1879; aged 86; died, July 8, of cerebral hemorrhage.

Arthur Caire Sr. @ New Orleans; Tulane University of Louisiana School of Medicine, 1892; aged 73; died, July 16.

Howard Augustine Gibbs, Blandford, Mass.; Boston University School of Medicine, 1882; aged 82; died, August 10.

Frank Brennand Kirby @ Evanston, Ill.; Jefferson Medical College of Philadelphia, 1902; aged 63; died, August 20.

Paul Jones, Snow Hill, Md.; Jefferson Medical College of Philadelphia, 1875; aged 88; died, July 21, of myocarditis.

Lawrence Buckner Farish, Atmore, Ala.; Medical College of Alabama, Mobile, 1901; aged 62; died, July 21.

Mary Enastasia Minor, Toledo, Ohio; Pulte Medical College, Cincinnati, 1899; aged 77; died, August 6.

Thomas W. Allison, Caledon East, Ont., Canada; Trinity Medical College, Toronto, 1900; died, July 2.

Hester Maria Sutherland, Berkeley, Calif.; Cooper Medical College, San Francisco, 1902; died, July 9.

Joseph R. Farrior, Chipley, Fla.; Louisville (Ky.) Medical College, 1877; aged 87; died, August 2.

G. F. Moseley, Cross Keys, S. C.; Atlanta (Ga.) Medical College, 1888; aged 84; died, July 15.

Correspondence

THE NATIONAL NUTRITION

To the Editor:—In the fall of 1940 a nutrition conference on white bread announced in the press apparently following a suggestion of Surgeon General Parran (Nutrition and National Wealth: Dietary Deficiency Is Widespread and Serious, with More Than 40 per Cent of the Population on Inadequate Rations, *Technology Review* 42:323 [Aug.] 1940) that 40 million Americans were suffering from vitamin deficiency. Then at the meeting of the first National Nutrition Conference for Defense, May 25-27, 1941, in Washington, that eminent bedside clinician Paul V. McNutt upped the General 5 million (what is 5 million Americans among bureaucrats?) and said that 45,000,000 "lack the foods we know are essential for health" and that "another 50,000,000 have impaired health because they do not eat the right food."

These statements, which were practically unsupported by any statistical survey, are so astonishingly at variance with the experience of my colleagues and myself in dispensary and general hospital practice, where we regularly see those on relief, WPA workers and others on an economic level which would assumedly lead to nutritional deficiency, that I began an investigation, the results of which I lay before you.

In reply to my inquiry the following hospitals kindly furnished me information:

At the Massachusetts General Hospital in the three years 1938, 1939 and 1940 there were admitted a total of 46,857 patients. On these a diagnosis of vitamin deficiency was pronounced in 111 cases, or 0.23 per cent (statistics furnished by Dr. Howard Sprague of the attending staff).

At Johns Hopkins Hospital in the ten years 1930-1940 there were admitted approximately 150,000 patients. Of these a diagnosis of vitamin deficiency was pronounced in 170 cases, or 0.14 per cent (statistics furnished by Dr. Edwin L. Crosby, assistant director and statistician).

To change the geography, at the County Hospital, Santa Barbara, Calif., from 1937 to 1940 there were 6,397 admissions with 26 cases of vitamin deficiency (statistics furnished by Dr. Luin Thacher of the staff).

At the University of Kansas Hospitals in three years there were 26 cases of vitamin deficiency in 19,152 admissions (inpatients). In the outpatient department there were 114 cases in approximately 80,000 new admissions.

At the Kansas City General Hospital in three years (1938-1940) there was a total of 36 cases of vitamin deficiency recorded in an average of 12,000 admissions annually.

If these figures are a guide to the incidence of vitamin deficiency in the United States, it is infinitely far below 40 per cent, or 95 million.

It is hardly possible to assume that the staffs of the Massachusetts General Hospital and Johns Hopkins Hospital do not recognize vitamin deficiency even in the subclinical forms when they see it.

Dr. Walter C. Alvarez of the Mayo Clinic wrote me: "I feel exactly as you do about the stampede over the vitamins. I have always felt that we have gone into this thing most unscientifically. Here at the clinic I just can't find patients whose troubles I think are due to clearcut vitamin deficiency."

Dr. Tom D. Spies states, in Cecil's Textbook of Medicine, "Its [beriberi or polyneuritis] incidence is high among pellagrins, alcoholic addicts and pregnant women." One of my obstetric friends told me "I have been looking for ten years for a case of polyneuritis complicating pregnancy and have yet to find it." So I wrote some obstetricians:

Dr. George R. Pendleton of Kansas City, Mo., compiled his statistics in charity ambulatory clinic, general hospital and private practice. From 1929 to 1939 there were 16,649 deliveries with no case of polyneuritis.

Dr. Joseph Baer of Chicago wrote me that he had seen 2 cases of polyneuritis in the last two years in about 9,000 cases of pregnancy.

Dr. L. A. Calkins, professor of obstetrics at the University of Kansas, told me he could remember only 1 case of polyneuritis in an experience of over 20,000 obstetric cases.

Dr. Buford Hamilton of Kansas City has seen two cases of polyneuritis in a consultation practice of 2,500 cases. Drs. Harold

Summary of Three Hundred Histories

I. Dietary Habits:

1. Glasses of milk a week:

23 cases.....none
277 cases.....6-28 glasses

2. Eggs a week:

300 cases.....2 to 24 eggs

3. Citrus fruits (oranges, lemons, limes, grapefruit and tomatoes):

27 cases.....none
66 cases.....1+
95 cases.....2+
56 cases.....3+
56 cases.....4+

4. Oatmeal:

140 cases.....none
36 cases.....occasional
124 cases.....moderate

5. Bread

63 cases.....whole wheat
101 cases.....white
136 cases.....whole wheat and white and rye

6. Carrots:

26 cases.....0
274 cases.....+

7. Corn:

35 cases.....0
265 cases.....+

8. Squash:

172 cases.....0
138 cases.....+

9. Sweet potatoes:

45 cases.....0
255 cases.....+

10. Spinach:

36 cases.....0
274 cases.....+

II. Possible Defective Absorption:

1. Indigestion:

248 cases.....0
52 cases.....(gas, heartburn, dyspepsia)

2. Peptic ulcer:

2 cases.....healed

3. Biliary Disease: No cases

4. Diarrhea: No cases

5. Teeth:

73 cases.....bad (sepsis, snags, loss)
37 cases.....fair
36 cases.....plates
154 cases.....good

III. History of Muscle Pains: None

IV. History of Night Blindness: None

V. History of Sore Tongue or Lips:

295 cases.....none
5 cases.....canker sores

IV. History of Cutaneous Eruptions:

294 cases.....none
4 cases.....attacks of boils
2 cases.....folliculitis

VII. Persistent Goose Flesh of Thighs and Upper Arms: None

VIII. Pigmented Dermatitis:

(a) Sock, glove or necklace type.....none
(b) Scruffiness of skin over knees.....none

IX. Nails: Brittle in.....4 cases

Hair dry in.....5 cases

X. Lips: No maceration

XI. Tongue: No cases of sore, red, ulcerated or atrophied

XII. Nervous System: No paresthesias

XIII. Blood Vitamin C: (78 cases)

	Vit. C Intake		Blood Vit. C		No. Cases	Avitaminosis Signs of Vit. C
	No. of Cases		Mg. per 100 Cc.	Level in		
0	7		0		0	0
1	17		0.0-0.25		31	0
2	25		0.25-0.50		19	0
3	15		0.50-0.75		15	0
4	14		0.75-1.9		13	0

XIV. Physical examination of 1,265 men failed to show any instance of avitaminosis.

L. Gainey, Paul Gempel, J. Milton Singleton and Eugene H. Ferguson, all of Kansas City, have seen no cases in a combined experience of over 4,000 cases in the last five years. Drs. Kenneth Cox, Hugh G. Hamilton, Charles White, D. T.

Vandel, A. B. Sinclair and W. C. Mixson, all of Kansas City, have seen a total of 13 cases of polyneuritis in a combined experience of over 3,600 obstetric cases in the last five years.

I wrote alcoholic addiction sanatoriums: Ralph (Kansas City, Mo.), Highland (Asheville, N. C.) and Wallace (Memphis, Tenn.). Wallace at Memphis had the highest rate, 206 cases in 1940, with 3 complicated by pellagra and 5 by polyneuritis. Highland Hospital, Asheville, said "The incidence has been minimum."

Spics, in the article on pellagra in Cecil's Text Book of Medicine (1940), states that there are 400,000 cases of pellagra in the United States. The only evidence he advances for this figure is the statement that in the Southern states 10 per cent of the inmates of the insane asylums are pellagrins. Dorn (U. S. P. H. S.) estimated in 1938 (the latest year statistics have been compiled) that there were 353,305 inmates of insane asylums in the United States. Allowing the South its due share, let us say there were 150,000 inmates in their asylums. This gives 15,000 pellagrins, leaving 385,000 to be found.

Landis, Carney and Page (Modern Society and Mental Disease, New York, Farrer & Rinehart, Inc., 1938) estimate that there are 590,000 inmates of mental hospitals in the United States, so on that basis it leaves about 375,000 pellagrins to be found—quite a lot when one considers that at the Massachusetts General Hospital there were 9 cases in three years, at the University of Kansas Hospitals 5 cases and at the General Hospital, Kansas City, 19 cases.

It may be argued that the hospital admission of full blown examples of vitamin deficiency is not an index of the incidence in the general population. I do not concur in that, but it is debatable. The fact that classic vitamin deficiencies are clinical rarities seems to have impinged on the nutrition experts' consciousness, so we hear of "subclinical" vitamin deficiency that can be discerned only by physicians who "possess the rather special training necessary to recognize the widespread prevalence of submarginal degrees of deficiency disease." This is the old bull—the general practitioner or the general internist is so dumb he can't recognize these fine points that are so clear to a government doctor.

But in order to check on this and obtain a survey of a cross section of the population, I asked Dr. J. G. Schnerdorf, who is physician to a large industrial plant in Kansas City, to examine a group of the employees. The employees are on a medium economic level. Dr. Schnerdorf and I prepared a questionnaire based on the literature of "submarginal" deficiencies. The survey required three months. A more detailed report is in preparation, but a summary follows.

Briefly the survey showed no clinical vitamin deficiency in the careful examination of 300 unselected employees, and no clinical vitamin deficiency observed in the physical examination of 1,265 men.

Particularly noticeable in this survey is the fact that blood levels of vitamin C are extremely variable and probably rise promptly on ingestion of vitamin C containing food.

Other studies (Williams, R. D.; Mason, H. L.; Wilder, R. M., and Smith, B. F.: Observations on Induced Thiamine Deficiency in Man, *Arch. Int. Med.* 66:785 [Oct.] 1940. Meyers, F. M.: Possible Adaptation to a Low Vitamin B Intake, *Am. J. M. Sc.* 201:785 [June] 1941. Lund, C. C., and Crandon, J. H.: Human Experimental Scurvy, *THE JOURNAL*, Feb. 22, 1941, p. 663) indicate that a low blood level of vitamin B and vitamin C can exist for a long time without clinical evidence of beriberi or scurvy. Certainly one must regard the reports of vague fatigue states, nervousness, insomnia, irritability and "marasmus" (whatever that is) "cured" by vitamin therapy and therefore due to vitamin deficiency with healthy skepticism as one does reports of the cure of ptosis, "enlargement of the legs above the ankles," hemiplegia and "regular reduction of golf score to the high seventies while under vitamin treatment."

I would not wish, naturally, these findings to be interpreted as casting any doubt on the validity of the vitamin doctrine or to imply that there should be any relaxation in the instruction of the public in the requirement of vitamin containing foods in the dietary. But they do indicate, I think, that the American public is getting its vitamins; in fact with modern food production, transportation, refrigeration and distribution it is pretty hard for an American to avoid vitamins on an ordinary diet. This seems to apply even to the population levels of low intelligence and income. It seems hardly necessary to conduct the campaign by indulging in propaganda the only object of which is to scare the public by insinuations as to its ignorance of food requirements and carelessness in obtaining a balanced diet.

LOGAN CLENDENING, M.D., Kansas City, Mo.

"AUROTHERAPY IN RHEUMATOID ARTHRITIS"

To the Editor:—Your editorial on aurotherapy in rheumatoid arthritis (*THE JOURNAL*, August 2, p. 368) does not seem to me a fair statement of the present status of gold therapy either in this country or in England.

At the last meeting of the American Rheumatism Association an entire morning was devoted to this subject. I believe the majority of the members of that association now agree that gold therapy is the treatment of choice for atrophic arthritis and think that it is especially valuable in early cases.

As far as my associates and I can determine, gold is the only known drug that specifically influences the course of atrophic arthritis in a favorable manner. Since our paper on this subject was written we have continued to use gold, and by reducing the weekly dosage to 0.05 Gm. of sodium gold thiomalate, which contains 50 per cent gold, we have reduced the number of mild reactions and almost eliminated serious reactions and have not had any deaths from the treatment.

I believe that any good internist who can see the patient with atrophic arthritis once a week can use aurotherapy with relative safety and should use it in the treatment of this disease.

J. ALBERT KEY, M.D., St. Louis.

MAGNIFICATION OF SPERMATOZOA BY ELECTRON MICROSCOPE

To the Editor:—In order to set at rest the minds of any other readers who may have seen our preliminary report of "Magnification of Spermatozoa by Means of the Electron Microscope" in *THE JOURNAL*, May 31, we would refer to certain points in a communication recently appearing in one of the issues of *THE JOURNAL* making reference to this article.

The essential things pointed out in the preliminary report are that the structures described were viewed under a magnification of twenty-seven thousand diameters and can therefore not be compared with the microscopic anatomy formerly recognized at two or three thousand diameters by the use of an oil immersion lens. Furthermore, the sperm described in the article appeared to be "pear shaped" and the irregularity at the vertex of the head seemed to suggest the possibility of the presence there of a "distinct organ." Future studies with the same or more potent instruments should establish standards, both of mensuration and of anatomy, and may possibly aid in the recognition of biologic criteria for normal and abnormal male germ cells.

Only with this in mind can comparisons and investigations lead to useful results.

FRANCES SEYMOUR, M.D.
MOSES BENMOSCHE, M.D.
New York.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE
Chicago, Feb. 16-17, 1942. Council on Medical Education and Hospitals, Sec., Dr. William D. Cutter, 535 N. Dearborn Street, Chicago.

BOARDS OF MEDICAL EXAMINERS
BOARDS OF EXAMINERS IN THE BASIC SCIENCES
Examinations of boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL, September 13, page 955.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Part III. Baltimore and New York City, October; Boston, November. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF DERMATOLOGY AND SYPHILIGOLOGY: *Written.* Nov. 3. Final date for filing application is Sept. 23. *Oral.* Dec. 12-13. Final date for filing application is Nov. 8. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* April, in advance of the meeting of the American College of Physicians and June, in advance of the meeting of the American Medical Association. Applications should be on file 6 weeks in advance of the date of oral examination. Sec., Dr. William S. Middleton, 1301 University Ave., Madison, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written.* Part I. Group B. Various centers, Jan. 3. Final date for filing application is Oct. 6. *Oral.* Part II. Groups A and B. Atlantic City, May or June. Final date for filing application is March 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: *Written.* March 7. Final date for filing application is Dec. 1. Sec., Dr. John Green, 6830 Waterman Ave., St. Louis.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Washington, January. Final date for filing application is Nov. 1. Sec., Dr. Guy A. Caldwell, 3503 Prytania St., New Orleans, La.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral and Written.* All Groups, Philadelphia, June, preceding the meeting of the American Medical Association. Final date for filing application is March 1. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha, Neb.

AMERICAN BOARD OF PEDIATRICS: *Oral.* Philadelphia, March or April, at the time of the Region I meeting of the American Academy of Pediatrics. Cleveland, May, at the time of the Region III meeting of the American Academy of Pediatrics. Los Angeles, May, at the time of the Region IV meeting of the American Academy of Pediatrics. *Written.* Locally, approximately 6 weeks in advance of the date of oral examination. Sec., Dr. C. A. Aldrich, 707 Fullerton Ave., Chicago.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: *Oral.* New York, Dec. 19-20. Final date for filing application is Oct. 5. Sec., Dr. Walter Freeman, 1028 Connecticut Ave., N.W., Washington, D. C.

AMERICAN BOARD OF " " *Groups.* Atlantic City, June 4. Final date for filing application is May 1. Sec., Dr. Byrl R. Kirkin, 102-110 Second St., Minn.

AMERICAN BOARD OF SURGERY: *Written.* Part I. Various centers. Oct. 6. *Oral.* Part II. New York Nov. 10-11. A meeting of the board will follow on the 12th. Sec., Dr. J. Stewart Rodman, 225 S. Fifteenth St., Philadelphia.

AMERICAN BOARD OF UROLOGY: *Written.* Various centers, December. *Oral.* Chicago, February. Final date for filing application is Nov. 1. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

Utah July Report

The Utah State Board of Medical Examiners reports the written examination for medical licensure held at Salt Lake City, July 14, 1941. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Fifteen candidates were examined, all of whom passed. Eight physicians were licensed to practice medicine by reciprocity and 1 physician so licensed on endorsement of credentials of the National Board of Medical Examiners. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Northwestern University Medical School	(1940) 89, (1941)	87*	
Rush Medical College	(1940) 82, 83, 86, 87, 87, 87, 88	88	
St. Louis University School of Medicine	(1940)	80	
Washington University School of Medicine	(1940)	84	
" "	" "	84	
" "	" "	84	
" "	" "	83	
School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Stanford University School of Medicine	(1939)	California	
George Washington University School of Medicine	(1940)	California	
University of Louisville School of Medicine	(1940)	Kentucky	
Louisiana State University School of Medicine	(1938)	Arizona	
Harvard Medical School	(1931)	N. Carolina	
Washington University School of Medicine	(1937), (1939)	Missouri	
Woman's Medical College of Pennsylvania	(1916)	Penna.	

School	LICENSED BY ENDORSEMENT	Year Grad.
Duke University School of Medicine	(1938)	

* This applicant received the M.B. degree and will receive the M.D. degree on completion of internship. License has not been issued.

Colorado Endorsement Report

The Colorado State Board of Medical Examiners reports 19 physicians licensed to practice medicine by endorsement on July 1. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad. of
College of Medical Evangelists	(1937), (1939)	N. B. M. Ex.
University of California Medical School	(1934)	California
Northwestern University Medical School	(1934)	Iowa
Rush Medical College	(1934)	Michigan
State University of Iowa College of Medicine	(1939)	Iowa
University of Kansas School of Medicine	(1937)	Kansas
Detroit College of Medicine	(1904)	Michigan
Washington University School of Medicine	(1939), (1940)	Missouri
University of Nebraska College of Medicine	(1938), (1940), 6	Nebraska
Columbia University College of Physicians and Surgeons	(1936)	N. B. M. Ex.
Medical College of Virginia	(1940)	Virginia

Oregon Reciprocity Report

The Oregon State Board of Medical Examiners reports 9 physicians licensed to practice medicine by reciprocity on July 25. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Reciprocity Grad. with
College of Medical Evangelists	(1941), 2	Washington
University of Kansas School of Medicine	(1939)	Kansas
Louisiana State University School of Medicine	(1940)	Minnesota
University of Michigan Medical School	(1937)	Michigan
Washington University School of Medicine	(1936)	Missouri
Creighton University School of Medicine	(1928)	Nebraska
University of Wisconsin Medical School	(1939)	Wisconsin

Rhode Island July Report

The Rhode Island Board of Examiners in Medicine reports the written examination for medical licensure held at Providence, July 10-11, 1941. The examination covered 8 subjects and included 50 questions. An average of 80 per cent was required to pass. Eight candidates were examined, all of whom passed. One physician was licensed to practice medicine on endorsement of credentials of the National Board of Medical Examiners. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Georgetown University School of Medicine.....	(1940)		87.7
Rush Medical College.....	(1923)		86
Harvard Medical School.....	(1937)		93.2
Tufts College Medical School.....	(1939)		89.7
Columbia University College of Physicians and Surgeons	(1936) 90.8, (1939)		90.2
Hahnemann Medical College and Hospital of Philadelphia	(1940)		84.6
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin	(1938)		88
School	LICENSED BY ENDORSEMENT	Year Grad.	
Harvard Medical School.....	(1929)		

Vermont June Report

The Vermont Board of Medical Registration reports the written examination for medical licensure held at Burlington, June 17-19, 1941. The examination covered 12 subjects and included 90 questions. An average of 75 per cent was required to pass. Thirteen candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Columbia University College of Physicians and Surgeons	(1940)	88.2	
University of Vermont College of Medicine	(1941)*	84.4,	
86, 87.4, 88.1, 88.3, 88.7, 89.8, 91.8			
McGill University Faculty of Medicine	(1939)	87.1	
American University of Beirut School of Medicine	(1931)	87.1	

Three physicians were licensed to practice medicine on endorsement of credentials of the National Board of Medical Examiners from March 24 through July 18. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad.
Harvard Medical School	(1938)	
New York Medical College and Flower Hospital	(1937)	
University of Vermont College of Medicine	(1940)	

* Licenses have not been issued.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Refusal of Trial Court to Require Party to Submit to Spinal Puncture Not Error.—The plaintiff, a man aged 47, was injured in October 1936 in an automobile accident because of the negligence of an employee of the defendant corporation. Thereafter the plaintiff was hospitalized for more than six months for certain unstated conditions in his back, which he alleged were the result of the accident. For four months of that period his back was in a cast, and in June 1938 at the time of the trial of the suit that the plaintiff subsequently instituted against the defendant he claimed that he was unable to walk without a brace. He claimed also that his throat had been injured and that as a result hoarseness developed which was still present at the time of the trial. The defendant attributed the plaintiff's condition to syphilis and claimed that it was not the result of the accident. From a judgment in favor of the plaintiff, the defendant appealed to the Supreme Court of Colorado.

At the beginning of the trial the trial court had overruled a motion of the defendant to require the plaintiff to submit to a spinal puncture to determine the presence of syphilis. This action of the trial court, in the opinion of the Supreme Court, was not an abuse of its discretion. An order granting the motion, said the Supreme Court, would have been an invasion of the plaintiff's rights and beyond the court's authority without the consent of the plaintiff. That a court may order a plaintiff in a personal injury suit to submit to a physical examination is a proposition so well settled as to need no citation of authorities, but the rule may not be extended so far as to require the plaintiff, under the guise of a physical examination, to furnish samples of his bodily components to be used for the purpose of chemical analysis. It is not requisite that he do this to make out his own case, and, a fortiori, it is not required of him in order to bolster up his adversary's defense or perhaps, if the examination should be negative, to shatter such defense entirely. Even if there are court decisions to the contrary, and none were cited to the court, this court would not be disposed to follow them. Furthermore, had the fact that syphilis existed been determined with certainty, that fact would not have been conclusive, because a man who has syphilis can sustain a back injury as the result of trauma as well as one who is free from the disease. It would have done no more than furnish evidence of something that might be the cause of the plaintiff's continuing disability or might not. It would not be irrelevant as evidence because not conclusive if the facts were ascertainable without an unwarranted invasion of the plaintiff's right to the security of his person, since ordinarily any fact which makes probable the existence of another fact in dispute is relevant to prove the disputed fact.

The defendant next assigned error in the fact that the trial court overruled its objection to a hypothetical question put to a physician called as a medical expert by the plaintiff. The physician was asked whether certain pathologic conditions disclosed by a roentgenogram taken of the plaintiff were the result of a severe injury that occurred as of October 1936, the date of the accident in question. The physician answered "I would say very likely it is the result of the injury." As we view the matter, said the court, this is an expression of the physician's opinion that the accident and injury were an adequate cause to produce the pathologic condition that he found. The defendant's argument in support of the proposition that syphilis might be the cause of the plaintiff's continuing disability and that the defendant be permitted to show it is no different in kind from the plaintiff's argument that the accident might have caused the pathologic condition which the roentgenogram disclosed. There was no error in overruling the objection to the question. Whether the physician of his own knowledge knew of the facts of the accident and the injury other than from his examination

is not material. An expert may testify on an assumed state of facts if the assumptions have a reasonable basis in the evidence, and the court concluded that they did.

At the trial the defendant produced as witnesses two physicians who had been attending physicians to the plaintiff. The trial court refused to permit the physicians to testify on the ground that their testimony, without the consent of the plaintiff, was forbidden by a Colorado statute reading in part as follows:

"A physician or surgeon duly authorized to practice his profession under the laws of this state, or any other state, shall not, without the consent of his patient, be examined as to any information acquired in attending the patient, which was necessary to enable him to prescribe or act for the patient . . ." (Section 9, Chapter 177, 1935 C. S. A.)

Doubtlessly, said the court, the testimony of both of these physicians was relevant and material to the issues involved, but it was not competent because it is the policy of the law to preserve information procured from a patient by a physician for the purpose of treating him as a secret between them and inviolate except with the consent of the patient, and in this case such consent was not given. The trial court committed no error in excluding the testimony of the physicians.

For the reasons stated, the judgment in favor of the plaintiff was affirmed.—*Riss & Co., Inc., v. Galloway*, 114 P. (2d) 550 (Colo., 1941).

Society Proceedings

COMING MEETINGS

- American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 19-23. Dr. William P. Wherry, 107 South 17th St., Omaha, Executive Secretary.
- American Academy of Pediatrics, Boston, Oct. 8-11. Dr. Clifford G. Grulee, 636 Church St., Evanston, Ill., Secretary.
- American Clinical and Climatological Association, Skytop, Pa., Oct. 16-18. Dr. Francis M. Rackemann, 263 Beacon St., Boston, Secretary.
- American College of Surgeons, Boston, Nov. 3-7. Dr. Frederic A. Besley, 40 East Erie St., Chicago, Secretary.
- American Public Health Association, Atlantic City, N. J., Oct. 14-17. Dr. Reginald M. Atwater, 50 West 50th St., New York, Executive Secretary.
- American Roentgen Ray Society, Cincinnati, Sept. 23-26. Dr. Carleton B. Peirce, Royal Victoria Hospital, Montreal, Canada, Secretary.
- American Society of Tropical Medicine, St. Louis, Nov. 11-14. Dr. E. Harold Hinman, Wilson Dam, Ala., Secretary.
- Associated Anesthetists of the United States and Canada, Boston, Nov. 3-7. Dr. C. J. Wells, 1932 S. Salina St., Syracuse, N. Y., Secretary.
- Association of Military Surgeons of the United States, Louisville, Ky., Oct. 29-Nov. 1. Colonel James M. Plalenc, Army Medical Museum, Washington, D. C., Secretary.
- Central Association of Obstetricians and Gynecologists, New Orleans, Oct. 2-4. Dr. William F. Mengert, 515 Newton Road, Iowa City, Secretary.
- Clinical Orthopaedic Society, Cleveland and Akron, Ohio, Oct. 3-4. Dr. Myron O. Henry, 825 Nicollet Ave., Minneapolis, Secretary.
- Delaware Medical Society of, Wilmington, Oct. 7-8. Dr. C. L. Munson, 1015 Washington St., Wilmington, Secretary.
- District of Columbia Medical Society of the, Washington, Sept. 30-Oct. 2. Mr. Theodore Wiprud, 1718 M Street N.W., Washington, Secretary.
- Indiana State Medical Association, Indianapolis, Sept. 23-25. Mr. Thomas A. Hendricks, 23 East Ohio St., Indianapolis, Executive Secretary.
- Inter-State Postgraduate Medical Association of North America, Minneapolis, Oct. 13-17. Dr. Tom B. Throckmorton, 406 Sixth Ave., Des Moines, Iowa, Secretary.
- Kentucky State Medical Association, Louisville, Sept. 29-Oct. 3. Dr. Arthur T. McCormack, 620 South Third St., Louisville, Secretary.
- Mississippi Valley Medical Society, Cedar Rapids, Iowa, Oct. 1-3. Dr. Harold Swanberg, 510 Maine St., Quincy, Ill., Secretary.
- Nevada State Medical Association, Elko, Sept. 26-27. Dr. Horace J. Brown, P. O. Box 698, Reno, Secretary.
- Omaha Mid-West Clinical Society, Omaha, Oct. 27-31. Dr. J. D. McCarthy, 1036 Medical Arts Bldg., Omaha, Secretary.
- Pennsylvania Medical Society of the State of, Pittsburgh, Oct. 6-9. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.
- Southern Medical Association, St. Louis, Nov. 10-13. Mr. C. P. Loran, Empire Bldg., Birmingham, Ala., Secretary.
- Southern Minnesota Medical Association, Mankato, Sept. 29. Dr. Nelson W. Barker, 102 Second Ave., Rochester, Secretary.
- Texas Medical Society of Texas, Louisiana and Arkansas, El Dorado, Ark., Sept. 23-24. Dr. William Hibbits, 209 Pine St., Texarkana, Tex., Secretary.
- Vermont State Medical Society, Burlington, Oct. 2-3. Dr. Benjamin F. Cook, 154 Bellevue Ave., Rutland, Secretary.
- Virginia Medical Society of, Virginia Beach, Oct. 6-8. Miss A. V. Edwards, 1290 East Clay St., Richmond, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1931 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama State Medical Assn. Journal, Montgomery 11:1-40 (July) 1941

Treatment of Severe Asthma. H. J. Climo, Montgomery.—p. 1.
Management of Allergic Case. G. W. Warriek, Birmingham.—p. 4.
Obstetric Analgesia and Anesthesia. W. G. McCown, Huntsville.—p. 11.
Drug Eruptions. J. S. Snow, Birmingham.—p. 14.
Diagnosis and Treatment of Intestinal Polyps. F. M. Thigpen, Montgomery.—p. 17.
Gallbladder Surgery: Indications and Contraindications. C. C. Rouse, Mobile.—p. 24.

American Journal of Medical Sciences, Philadelphia 202:1-156 (July) 1941

- *Types of Orthostatic Hypotension and Their Treatment. W. A. Jeffers, H. Montgomery and A. C. Burton, Philadelphia.—p. 1.
- *Hypertension and Pressor Activity of Heated Extracts of Human Kidneys. E. M. Landis, Charlottesville, Va.—p. 14.
- Sustained Hypertension Following Experimental Unilateral Renal Injuries: Effects of Nephrectomy. B. Friedman, J. Jarman and P. Klemperer, New York.
- *Geriatric Aspect of Pulmonary Tuberculosis. J. T. Freeman and C. A. Heiken, Philadelphia.—p. 29.
- *V. Human Constitution and Syphilitic Infection. W. L. Fleming, Chapel Hill, N. C., and J. E. Moore, Baltimore.—p. 38.
- *Cephalin Flocculation Test in Cirrhosis of Liver. F. M. Hanger, New York, and A. J. Patek Jr., Welfare Island, N. Y.—p. 48.
- Causes of Painless Gastrointestinal Hemorrhage. E. Moschowitz, S. Mage and V. H. Kugel, New York.—p. 52.
- *Appraisal of Medical versus Surgical Treatment of Idiopathic Ulcerative Colitis: Follow-Up Data on Fifty Cases. K. A. Elsom and L. K. Ferguson, Philadelphia.—p. 59.
- Complete Roentgen Ray Studies of Gastrointestinal Tract in 400 Arthritides. E. W. Spackman, Waukegan, Ill.; T. F. Bach, C. W. Scull and R. Pemberton, Philadelphia.—p. 68.
- Relation Between Plasma and Dietary Ascorbic Acid. A. H. Bryan, Dorothea F. Turner, Ruth L. Huenemann and Gertrude Lotwin, Chicago, Ill.—p. 77.
- Effectiveness of Methyl Testosterone Administered Orally. J. Eidelberg and I. Madoff, New York.—p. 83.
- Scope of Artificial Impregnation in Barren Marriage. S. L. Israel, Philadelphia.—p. 92.
- Observations on Oral Administration of Ragweed Oil in Patients Hypersensitive to Ragweed Oil. J. M. Sheldon, Ann Arbor, Mich., and F. Blumenthal, Eloise, Mich.—p. 98.
- Clinical Investigations with Curare in Organic Neurologic Disorders. A. E. Bennett, Omaha.—p. 102.

Orthostatic Hypotension.—Jeffers and his associates made a clinical study of orthostatic hypotension, using normal and sympathectomized persons as controls. Blood pressure, pulse rate, digital blood flow and skin temperature tests were employed. Orthostatic persons were found to have either slight or severe impairment of reflex vasomotor functions or mechanical defects in the circulatory system. Orthostatic hypotension was associated with lesions of the central and peripheral nervous system (communicating hydrocephalus, tabes dorsalis and nerve injury secondary to arterial occlusion) with the postinfectious state and with venous angioma. The authors present a clinical evaluation of orthostatic hypotension and outline a rationale of treatment.

Hypertension and Pressor Activity of Kidney Extracts.—Landis reports experiments in which heated human kidney extracts were prepared from tissue, obtained at necropsy, of 16 persons with normal blood pressure and of 34 persons with severe hypertension. Anesthetized, nephrectomized rabbits were used for assay. It was found that kidney extracts prepared from persons with benign hypertension and chronic glomerulonephritis were no more active than those derived from normal kidneys. The four extracts which showed pressor activity out-

side the normal range were obtained from persons with malignant nephrosclerosis. But even here, because of variations in activity, no clear relation could be demonstrated by these methods between blood pressure during life and the renin content of kidney tissue after death.

Geriatric Aspect of Pulmonary Tuberculosis.—Freeman and Heiken report that in 3,000 routine postmortem examinations pulmonary tuberculosis was present in 25 per cent of the patients. The older age group, 60 or more years of age, comprised one third of the total necropsy incidence. In this fraction 28 per cent of the total incidence of pulmonary tuberculosis was found. Eleven per cent of these 28 per cent disclosed the fibro-ulcerative, 8 per cent the miliary and 65 per cent the healed fibroid form of pulmonary tuberculosis. Apparently, in persons more than 60, 5 per cent have fibro-ulcerative, 0.5 per cent miliary and 15 per cent healed fibroid pulmonary tuberculosis. The active form of the disease was as common in elderly white persons as in elderly Negroes; the miliary form was somewhat more common in the elderly Negro and the fibroid form much more common in the elderly white person. The symptom complex is similar to that of younger persons but may be obscured by the changes of increasing age or be interpreted as due to senile debility. Cough and expectoration (95 and 87 per cent, respectively) were the most common complaints, but hemorrhage, fever and night sweats were not uncommon. As a rule, the symptoms of onset of the pulmonary condition were mild. A positive family history of 26 per cent was encountered in 136 hospital protocols of older persons. Roentgenograms confirmed the clinical impression in every case in which they were used and showed cavitation in 60 per cent of the patients. In 69 per cent positive sputums were obtained by the routine smear method. Diabetic patients, constituting 11 per cent of this group, had positive sputums and 80 per cent had cavitation. Active therapy was negligible. The authors find that the large group of older diseased persons represent a major obstruction to the national tuberculosis program of the segregation of open cases. Earlier diagnosis, a more stringent isolation and more active treatment are advocated.

Cephalin Flocculation Test.—Hanger and Patek employed the cephalin flocculation test in 40 cases of cirrhosis of the liver in which a highly nutritious diet supplemented by vitamin B concentrate had been given for the purpose of testing the correlation between the clinical course and the intensity of the reaction. They arrived at the following conclusions: 1. Irrespective of apparent clinical improvement, the ultimate prognosis in patients with Laënnec's disease who persistently show strong positive reactions is not favorable. 2. Progressive decrease in the intensity of the cephalin flocculation reaction often accompanies clinical improvement and a return of blood proteins to normal values. 3. A negative reaction does not exclude the diagnosis of cirrhosis (persistently negative tests tend to have a relatively favorable course). 4. The intensity of the flocculation reaction does not parallel the presence or absence of ascites in cases of cirrhosis of the liver. Cases of alcoholic cirrhosis with jaundice were regularly observed to give a positive reaction.

Idiopathic Ulcerative Colitis.—Elsom and Ferguson studied two comparable groups of patients with idiopathic ulcerative colitis of which the one group (23 patients) received medical treatment only. In the other group (27 patients) various sidetracking operations were performed. The mortality rate for the two groups was practically equal (34 per cent as against 26 per cent). A comparison of the subsequent developments led the authors to conclude that those who were operated on were more nearly restored to normal health than those who were not. In the medically treated group, continued or intermittent manifestations of the disease were observed. The patients are either in poor or only fair health. Those operated on made, in some cases, dramatic recoveries. The great majority returned to their previous occupations and led, by their own definition, a normal life. They are satisfied with their treatment, even though it entails a permanent fistula. The procedure of choice is a preliminary ileostomy with subsequent colectomy in stages, if indications for it exist. The authors emphasize the necessity of close cooperation of the internist and the surgeon if best results are to be obtained.

American Journal of Pathology, Boston

17:293-468 (May) 1941

- Osseous Findings in Chronic Renal Insufficiency in Adults. A. M. Ginzler and H. L. Jaffe, New York—p. 293.
- Histochemical Study of Distribution of Alkaline Phosphatase in Various Normal and Neoplastic Tissues. E. A. Kabat and J. Furth, New York—p. 303.
- Comparative Experimental Studies of 200 Kilovolt and 1,000 Kilovolt Roentgen Rays: III. Biologic Effect on Skin of Albino Rat. E. A. Gall, J. R. Lingley and J. A. Hicken, Boston—p. 319.
- Alterations in Nuclear Viscosity During Experimental Carcinogenesis Determined by Ultracentrifugation. E. V. Cowdry and F. X. Paletta, St. Louis—p. 335.
- Acute Necrotizing Arteritis, Aortitis and Auriculitis Following Uranium Nitrate Injury in Dogs with Altered Plasma Proteins. R. L. Holman, Chapel Hill, N. C.—p. 359.
- Cytologic Response of Rats and Mice to Strain of Greening Streptococci. P. Gross, F. B. Cooper and Jane D. Phillips, Pittsburgh—p. 337.
- Reticulum Cell Sarcoma of Lymph Nodes. S. Warren, Boston, and J. P. Picena, Rosario, Argentina, South America—p. 385.
- Observations with Differential Stains on Human Islets of Langerhans. G. Gomori, Chicago—p. 395.
- Equine Encephalitis in Man. Alexandra Adler, Boston—p. 407.
- Infection of Normal and Passively Immunized Chick Embryos with *Corynebacterium Diphtheriae*. W. J. Cromartie, Nashville, Tenn.—p. 411.
- Phagocytic Activity of Oligodendroglia and Amphicytes in Brain, Spinal Cord and Semilunar Ganglion of Mouse During Inanition. W. Andrew, Dallas, Texas—p. 421.

Am. J. Syphilis, Gonorrhea and Ven. Dis., St. Louis

25:397-526 (July) 1941

- Reactivity of Serum and Spinal Fluid of Leprous Patients with Spirochetal Suspensions. H. Eagle, R. B. Hogan, C. F. Mohr, Baltimore, and S. H. Black, Carville, La.—p. 397.
- Reactivity of Serum of Malarial Patients with Spirochetal Suspensions. H. Eagle, Baltimore; J. R. S. Mays, Milledgeville, Ga.; R. B. Hogan, Baltimore, and L. C. Burney, Atlanta, Ga.—p. 406.
- Studies on Role of Spirochaeta Pallida in Wassermann Reaction. II. Relation of Spirochetal Antibodies to Wassermann Reaction. J. A. Kolmer, Clara C. Kast and Elsa R. Lynch, Philadelphia—p. 412.
- Genito-infectious Lesions in Male Complicated by Gonorrhea. G. Shrepps and D. K. Hibbs, Chicago—p. 435.
- *Treatment with Sulfapyridine of Gonorrheal Urethritis in Male: Analysis of Eighty Seven Cases. L. W. LaTowsky, F. Knight, and C. A. W. Uhle, Philadelphia—p. 445.
- Preliminary Report of Sulfanilamide, Sulfapyridine and Local Therapy in Gonococcal Infection in Women. H. C. Hasseltine, Lucile R. Hae, F. L. Adair and D. K. Hibbs, Chicago—p. 454.
- Report of Committee on Survey of Research of American Neisseria Medical Society. Ruth B. Thomas, Dover Foxcroft, Maine—p. 461.
- Divided Doses of Typhoid H Antigen Vaccine in Treatment of Syphilis. G. V. Kulchar and J. F. Card, San Francisco—p. 466.
- Treatment of Neurosyphilis with New Pentavalent Arsenical, Aldarsore. L. Spiegel, W. Liefer and H. Sarason, New York—p. 472.
- Therapeutic Activity of Organic Arsenical Compounds in Syphilis of Rabbits in Relation to Urinary Excretion of Arsenic. J. A. Kolmer, H. Brown and Anna M. Rule, Philadelphia—p. 486.
- Present Status of Gonorrheal Vaginitis Problem. R. M. Lewis, New Haven, Conn.—p. 496.
- Psychosis During Administration of Sulfanilamide. J. R. Waugh, Norfolk, Va.—p. 504.
- Effects of Solisminol Solution Orally in Experimental Syphilis. P. J. Hanzlik and W. Van Winkle Jr., San Francisco—p. 508.

Sulfapyridine for Gonorrheal Urethritis.—LaTowsky and his co-workers used sulfapyridine in the treatment of 87 men with gonorrheal urethritis. Twenty-five of them defaulted, leaving 62 who were followed until cure or failure resulted. Of the 57 patients who were eventually cured by sulfapyridine, 14 had complications; 9 epididymitis, 3 balanoposthitis and 2 arthritis. All patients received the drug two, three or four times daily. The average dose was 23.5 Gm. given over an average of eleven days. Evidence of bacteriologic cure, as revealed by culture, was usually obtained fifty-one days from the beginning of specific treatment. The final provocative test for cure was two or more negative smears and cultures of prostatic fluid. Cultures were deemed of greater diagnostic value in both symptomatic and asymptomatic gonorrhea. Complications during treatment developed in 3 patients: epididymitis in 2 and periurethral abscess in 1. These 3 patients were not fully cooperative. They failed to appear at the clinic on the designated day, they had coitus or they drank alcohol. All complications eventually yielded to treatment with sulfapyridine. The time elapsing between the disappearance of the symptoms and the last positive culture averaged seventeen and seven-tenths days and ranged from two to fifty days. This interval constitutes a carrier state.

American Review of Tuberculosis, New York

44:1-122 (July) 1941

- Composition of Diesel Engine Exhaust Gas. H. H. Schrenk and L. B. Berger, Pittsburgh—p. 669.
- *Sulfonamide Therapy in Male Gonorrhea. Comparative Study. R. Deakin, M. Wortman and R. LaForce, St. Louis—p. 682.
- Contribution of Student Health Service to Adult Health Education. C. E. Shepard, Palo Alto, Calif., and I. W. Sander, Detroit—p. 687.
- Clinical Consultations and Hospital Care Services in Maternal and Child Health Program. Martha L. Clifford, Hartford, Conn.—p. 693.
- Objectives of Regular Child Health Supervision. Are They Being Met by the Average Child Health Conference? A. Christie, San Francisco—p. 697.
- Assessment of Nutrition of Rural Population in Tennessee. J. B. Youmans, Nashville, Tenn.—p. 704.
- Simplification of Records Through Analysis of Procedures. J. O. Dean and M. C. Henderson, Washington, D. C.—p. 709.
- What Can the Dental Health Worker Teach Regarding Nutrition and Diet? W. R. Davis, Lansing, Mich.—p. 715.
- Advances in Methods of Murine Typhus Control. R. J. Boston, Atlanta, Ga.—p. 720.
- Sulfonamide for Male Gonorrhea.**—Deakin and his associates treated 519 unselected cases of male gonorrhea with seven different chemotherapeutic agents. Their conclusion is that sulfathiazole appears to be the most effective drug at present on the market for the treatment of male gonorrhea. It is well tolerated, relatively nontoxic and induces noninfection rapidly. Their comparative study of sulfanilamide, sulfapyridine and sulfathiazole indicated that 4 of 20 men could be reasonably expected to be cured at the end of a week when treated with a moderate daily dose of sulfanilamide combined with mild local therapy. Two Gm. of sulfapyridine daily for ten days without local treatment cured 15 of 20 men. On the other hand, 19 of 20 men will be cured at the end of a week by the sole oral use of 20 Gm. of sulfathiazole over a period of five days.
- History of Development of Purified Protein Derivative Tuberculin. Florence B. Seibert, Philadelphia—p. 1.
- Tuberculin Purified Protein Derivative: Preparation and Analyses of Large Quantity for Standard. Florence B. Seibert, Philadelphia, and J. T. Glenn, Glenolden, Pa.—p. 9.
- Pulmonary Insufficiency. I. Discussion of Physiologic Classification and Presentation of Clinical Tests. A. Cournaud and D. W. Richards Jr., New York—p. 26.
- *Thrombosis of Pulmonary Artery. J. W. Savacool and R. Charr, Philadelphia—p. 42.
- Leukocyte Count and Recovery from Tuberculosis. C. H. Boissacian and E. N. Chapman, Colorado Springs, Colo.—p. 58.
- *Laboratory Procedures in Intestinal Tuberculosis. A. L. Kruger and H. J. Perlberg, Jersey City, N. J.—p. 73.
- Influence of Posture on Intrapleural Pressure in Artificial Pneumothorax. S. Cohen, Jersey City, N. J.—p. 78.
- Chemotherapy of Experimental Tuberculosis. H. H. Perlman, H. Brown and G. W. Raiziss, with assistance of Anna Rule, Philadelphia—p. 83.
- Spontaneous Closure of Tuberculous Cavities: Roentgenologic Study. E. R. Wiese, White Haven, Pa.—p. 92.
- Present Status of Tuberculin Patch Test. Camille Kereczfuri, New York—p. 94.

Thrombosis of Pulmonary Artery.—Savacool and Charr studied 12 tuberculous patients who at necropsy showed massive thrombosis of the pulmonary artery. Only cases in which there was a large thrombus almost or completely occluding the main trunk of the pulmonary artery or its main branches were

included in this study. In 8 the thrombus was in the right pulmonary artery, in 2 in the left artery and in 2 it extended into both arteries. The preponderance of thrombosis in the right pulmonary artery is in keeping with the observations of the 88 reported in the literature (41 right, 4 left and 43 bilateral). Even when the thrombus occurred in both arteries, the one in the right artery looked older, suggesting that it originated there. This preponderance of thrombosis in the right pulmonary artery may be due to the anatomic relation of the arteries to their adjacent structures. On the right side, the artery is crossed over by the arch of the aorta and at the hilus it is "squeezed" between the vein and the bronchus. On the left side, the artery is relatively free. The principal clinical features are dyspnea, cyanosis, pain in the chest, restlessness, mental confusion, weak thready pulse, low blood pressure and ankle edema. This condition simulates spontaneous pneumothorax complicating pulmonary tuberculosis.

Laboratory Procedures in Intestinal Tuberculosis.—According to Kruger and Perlberg, who investigated the diagnostic value of Woldman's phenolphthalein test and of the human feces in determining intestinal tuberculosis, both of these criteria have no direct diagnostic significance. However, they believe that these criteria should be applied by way of differential diagnosis, as other diseases which give a similar roentgenologic picture are thereby eliminated. The diagnosis of intestinal tuberculosis can be made on the following findings: (1) pulmonary tuberculosis with a positive sputum or a history of positive sputum, (2) symptoms referable to the gastrointestinal tract (found in 96.5 per cent of the patients with intestinal tuberculosis) and (3) roentgenologic studies of the intestinal tract showing the characteristic ileocecal spastic filling defect.

Annals of Internal Medicine, Lancaster, Pa.

14:2167-2376 (June) 1941

- Medical Activities of Augmented Military Forces. J. C. Magee, Washington, D. C.—p. 2173.
Problem of the Internist in the Navy. R. T. McIntire, Washington, D. C.—p. 2179.
Medicine in England Now. T. Parrau, Washington, D. C.—p. 2184.
Nutrition in the United States: Program for Present Emergency and the Future. R. M. Wilder, Rochester, Minn.—p. 2189.
Concentration of Arsenic in Tissues and Excretion of Arsenic by Experimental Animals Following Intravenous Injection of Massive Doses of Mapharsen. H. J. Magnuson and B. O. Raulston, Los Angeles.—p. 2199.
Immediate Prognosis of Congestive Heart Failure. N. H. Boyer, C. E. Leach and P. D. White, Boston.—p. 2210.
Frequency and Character of Urinary Tract Infections in Unselected Group of Women. C. D. Marple, San Rafael, Calif.—p. 2220.
Intermittent Limping—Intermittent Claudication: Their Differential Diagnosis. I. Mufson, New York.—p. 2240.
Pneumonia As It May Affect Young Adults: Three Hundred Consecutive Cases Among Students at University of Wisconsin. C. E. Lyght, Northfield, Minn., and L. R. Cole, Madison, Wis.—p. 2246.
Hemorrhagic Pleural Effusion: Analysis of 120 Cases. K. Berliner, New York.—p. 2266.
Antacids: Their Effect by Titration and Within Human Stomach. H. C. Breuhau and J. B. Eyerly, Chicago.—p. 2285.
New Type of Graduate Course in Internal Medicine. N. L. Crone and J. H. Means, Boston.—p. 2292.

Archives of Dermatology and Syphilology, Chicago

44:1-146 (July) 1941

- Prevalence of Syphilis of Bones and Joints. J. Buchman and H. S. Lieberman, New York.—p. 1.
Dermatitis from Nail Lacquer. R. B. Palmer, Lincoln, Neb.—p. 13.
Blood Transfusion Syphilis: Report of Case. J. C. Bulfamonte, Shamokin, Pa.—p. 23.
Epitheliomatous Degeneration in Scar of Burn: Report of Case. F. J. Halford and H. C. Gotshall, Honolulu, Territory of Hawaii.—p. 26.
Congenital Ichthyosiform Erythroderma. T. K. Lawless, Chicago.—p. 30.
End Results of Therapy of Epithelioma of Skin. S. Warren and C. R. Lulenski, Boston.—p. 37.
Elkonite, a Colloidal Clay Ointment Base. G. V. Kulchar, San Francisco.—p. 43.
Lichen Planus Follicularis Circumscriptus: Report of Two Cases. F. C. Combes and S. M. Bluefarb, New York.—p. 46.
Neurodermatitis Associated with Incompetent Greater Saphenous Veins: Report of Case. W. W. Heyerdale and E. E. Cannon, Rochester, Minn.—p. 52.
Oral Lesions in Pityriasis Rosea. S. S. Greenbaum, Philadelphia.—p. 55.
Dermatitis Herpetiformis in Infant: Report of Case. D. J. Wilson, Omaha.—p. 58.
Legal Aspects of Patch Tests. J. G. Downing, Boston.—p. 63.

Archives of Internal Medicine, Chicago

68:1-180 (July) 1941

- *Thrombosis of Deep Veins of Leg: Its Clinical Significance as Exemplified in 351 Autopsies. W. C. Hunter, V. D. Snedden, T. D. Robertson, Portland, Ore., and G. A. C. Snyder, Spokane, Wash.—p. 1.
Serum Lipids in Patients with Rheumatoid Arthritis and in Patients with Obstructive Jaundice: Comparative Study. W. D. Block, O. H. Buchanan and R. H. Freyberg, Ann Arbor, Mich.—p. 18.
Immediate Serum Reactions in Man: Classification and Analysis of Reactions to Intravenous Administration of Antipneumococcus Horse Serum in Cases of Pneumonia. D. D. Rutstein, Elizabeth A. Reed, A. D. Langmuir and E. S. Rogers, Albany, N. Y.—p. 25.
*Torula Infection of Lungs and Central Nervous System: Report of Six Cases with Three Autopsies. D. L. Reeves, E. M. Butt and R. W. Hammack, Los Angeles.—p. 57.
Fusospirochetosis: Recovery of Causative Organisms from Blood, with Report of Two Cases. R. H. Williams, Boston.—p. 80.
*Cause of So-Called Side Ache That Occurs in Normal Persons: Personal Observations. R. B. Capps, Chicago.—p. 94.
Vitamin A and Carotene Content of Human Liver in Normal and in Diseased Subjects: Analysis of 116 Human Livers. Elaine P. Ralli, E. Papper, K. Paley and E. Bauman, New York.—p. 102.
Hemorrhagic Diathesis: Analysis of 355 Autopsy Reports. L. Perlman and T. A. Fox, Chicago.—p. 112.
Treatment of Lobar Pneumonia with Rabbit Antipneumococcus Serum. E. H. Loughlin, S. H. Spitz and R. H. Bennett, Brooklyn.—p. 121.
Metabolism and Diabetes. E. H. Ryncarson and Alice G. Hildebrand, Rochester, Minn.—p. 134.

Thrombosis of Deep Veins of Leg.—In order to ascertain whether venous thrombosis was more frequent in one type of hospital than in another, Hunter and his co-workers present the data of a cooperative effort from a charity hospital, a state psychopathic institution and two private hospitals, at which institutions a total of 209 pairs of soleus and gastrocnemius muscles were subjected to microscopic study. Thrombi of varying age proved to be present in 52.7 per cent of the 351 unselected middle aged and old patients who before necropsy were forced to bed for varying periods of time without the aid of exercise or gravity for maintaining an efficient venous circulation. Thrombi in the veins accompanying the larger arteries were more frequent than in other veins and were present in the soleus muscle more often than in the gastrocnemius. Fatal pulmonary embolism was responsible for 3.13 per cent of all the deaths; in 45.4 per cent the most probable cause was embolism from a thrombosed leg vein. Although fulminating emboli often arise from the femoral vessels, thrombosis here represents an extension from older clots in the legs and feet. There was little difference in the incidence of thrombosis between medical and surgical patients or between males and females. The respective percentages of thrombosis for the four hospitals were 59, 49, 41.8 and 40, and for the males and females it was 52.2 and 53.5. Phlebitis, either as a cause or as a complication of thrombosis, played a minor part. Phlebothrombosis of the deep veins of the leg because it is clinically silent is likely to be forgotten until embolic phenomena occur. Planned and supervised voluntary exercise should greatly reduce the incidence of thrombosis and its frequent sequela, pulmonary embolism.

Torula Infection of Lungs and Central Nervous System.—Reeves and his associates point out that the protein clinical nature of cryptococcosis or torulosis has often caused it to be confused with tuberculous meningitis, epidemic encephalitis, syphilis and cerebral tumor or abscess. Frequently the cause of the disease has been revealed only at necropsy. They report 6 personally observed cases which indicate that the diagnosis may continue to be difficult and confusing. The diagnosis can be ascertained only by the growth of the fungus from the spinal fluid and its differentiation from other infectious granulomas: blastomycosis and coccidioid granuloma. The course of the infection in 1 of their patients was strikingly different from that in the others who died within a few months. At the time of writing, the duration of illness in this patient has been more than two and a half years. Improvement has taken place, and only time will show whether this is another instance of a remission or the beginning of recovery. This patient presented the first opportunity for the use of sulfapyridine, but improvement was evident prior to its trial. Sulfapyridine was used three days prior to the death of 1 of the other patients without any beneficial effect. Numerous cultures and examinations of 2 patients were made before the organism was discovered. With the exception of the patient who is still living, in whom the condition was first thought due to syphilis because of the positive

Wassermann reactions, the presumptive diagnosis in the other patients was tuberculous meningitis. Although the proper diagnosis was established in all patients prior to their death or necropsy, it was made possible only by laboratory data. Because of the pathologic condition of the organs of the sixth patient the authors believe that it was another example of generalized torula infection.

Cause of Side Ache.—Capps observed 114 attacks of side ache or "stitch in the side" in 55 persons. The important features were found to be a constant relation to exertion, a tendency for the ache to occur after eating, a variable location, usually in either the right or the left upper quadrant of the abdomen, relief by bending over or from local pressure and a tendency to aggravation in cold weather. Previously proposed theories regarding the mechanism of pain are untenable. Anoxemia of the diaphragmatic muscle for the side ache is the explanation offered. Why the pain is generally unilateral is not clear. Perhaps the person stops exercising before the other side begins to hurt. Improved breathing might well put less of a load on the diaphragm.

Archives of Pathology, Chicago

32:1-168 (July) 1941

- Primary Systemic Amyloidosis. Report of Two Cases in Negroes, with Special Reference to Certain Histologic Criteria for Diagnosis. B. Pearson, M. M. Rice and K. L. Dickens, New Orleans.—p. 1.
Visualization of Vitamin A in Rat Organs by Fluorescence Microscopy. H. Popper and R. Greenberg, Chicago.—p. 11.
So-Called Intercapillary Glomerulosclerosis—Lesion Associated with Diabetes Mellitus Morphogenesis and Significance. A. C. Allen, New York.—p. 33.
Congenital Anomaly of Cerebellar Vermis. A. L. Sahs, Iowa City.—p. 52.
Anatomic Findings in Heart in Combined Hypertension and Syphilis. C. L. Royster, Raleigh, N. C., J. R. Lisa and J. Carroll, New York.—p. 64.
Effect of Prolonged Administration of Large Quantities of Sodium Bicarbonate on Kidney of Dog. J. B. Kirsner, Chicago.—p. 76.
Response of Cartilage and Bone of Growing Mice to Testosterone Propionate. M. Silberberg and Ruth Silberberg, St. Louis.—p. 85.
Legal Aspects of Autopsies and Pathologic Specimens in Missouri. W. E. B. Hall, Denver.—p. 96.
Constitution and Related Factors in Resistance to Tuberculosis. E. R. Long, Philadelphia.—p. 122.

Archives of Surgery, Chicago

43:1-168 (July) 1941

- *Physiologic Effects of High Concentrations of Oxygen in Experimental Secondary Shock. H. A. Davis, New Orleans.—p. 1.
*Resection of Liver for Hepatoma. R. H. Wallace, Boston.—p. 14.
Skin Transplantation by Injection: Its Effect on Healing of Granulating Wounds. C. G. Barber, Cleveland.—p. 21.
Actual Growth of Young Cartilage Transplants in Rabbits. Experimental Studies. S. M. Dupont, Pittsburgh.—p. 32.
Capillary Permeability and Inflammation in Rabbits Given Heparin. R. H. Rigdon and H. Wilson, Memphis, Tenn.—p. 64.
Effect of Hepatic Damage on Gastric Acidity. M. H. Streicher, Chicago.—p. 74.
Basal Cell Epithelioma of Anus: Report of Two Cases. K. B. Lawrence, Boston.—p. 88.
Functional Effect of Neosynephrin on Anesthetized Dog: Observations of Blood Pressure, Pulse, Respiration and Flow of Urine and Bile. P. H. Lorhan and J. G. Schuedorf, Kansas City, Kan.—p. 94.
Basal Cell Carcinoma of Vulva: Report of Four Cases. J. M. Wilson, Durham, N. C.—p. 101.
Spinothalamic Tractotomy in Medulla Oblongata: Operation for Relief of Intractable Neuralgias of Occiput, Neck and Shoulder. J. C. White, Boston.—p. 113.
Review of Urologic Surgery. A. J. Scholl, Los Angeles; F. Hinman, San Francisco; A. von Lichtenberg, Mexico City, Mexico; A. B. Hepler, Seattle; R. Gutierrez, New York; G. J. Thompson, J. T. Priestley, Rochester, Minn.; E. Wilbolz, Berne, Switzerland, and V. J. O'Connor, Chicago.—p. 128.

Oxygen in Experimental Secondary Shock.—Davis reports a series of experiments undertaken to investigate the physiologic action of high concentrations of oxygen on dogs in which secondary shock had been induced, employing normal dogs as controls. The author found that the administration of oxygen was most efficacious when the reduction of blood volume had ceased and least efficacious in shock associated with a continued decrease in the blood volume. The best results were obtained in dogs with mild hemorrhagic shock. Good results were also obtained in dogs with severe hemorrhagic shock, but oxygen was

relatively of little value when shock was associated with hemoconcentration, owing probably to the continued reduction in the blood volume. The clinical considerations deduced by the author from his experiments are that (1) the administration of oxygen should be regarded merely as a subsidiary form of treating shock, (2) best results are obtained before considerable diminution has occurred, regardless of whether the shock is associated with hemodilution or hemoconcentration and (3) oxygen is useless in severe shock if the blood volume continues to decrease. If the blood volume is low but no further decrease occurs, oxygen may tend to stabilize the low blood pressure and prevent its further fall until other forms of therapy are available.

Partial Hepatectomy for Hepatoma.—Wallace reports a rare case of a 23 year old Italian mother of three children with a large solitary liver cell hepatoma, on whom partial resection of the liver was performed. She had had a lump in the right side for four years and an increasing dragging sensation. The lump had been variously diagnosed as a floating kidney, cyst, renal tumor and an ovarian cyst. On resection, the tumor measured 15 by 13 by 5 cm. Microscopically the tissue was seen to be composed of cords of cells recognizable as hepatic cells, arranged in lobular formation about the central veins. The portal spaces contained an artery and a vein, but no bile ducts could be made out. Five years after the operation she was well and presented no signs of weakness, discomfort or indigestion. Hepatoma in an otherwise normal liver may originate in the parenchymatous liver cells or in the intrahepatic bile ducts. The tumor may grow slowly for years before it spreads through the hepatic vessels or metastasizes widely. A primary hepatoma may be encapsulated and appear benign. However, hepatomas originating either in the liver cells or in the bile ducts are potentially malignant and should be removed.

Bulletin of Johns Hopkins Hospital, Baltimore

68:425-552 (June) 1941

- Blood Flow to Forearm and Calf: I. Vasomotor Reactions; Role of Sympathetic Nervous System. R. W. Wilkins and L. W. Eichna, Baltimore.—p. 425.
Id.: II. Reactive Hyperemia, Factors Influencing Blood Flow During Vasodilatation Following Ischemia. L. W. Eichna and R. W. Wilkins, Baltimore.—p. 450.
Id.: III. Effect of Changes in Arterial Pressure on Blood in Normal and Hypertensive Subjects. R. W. Wilkins and L. W. Eichna, Baltimore.—p. 477.
Id.: Thyroid Activity; Observations on Relation of Blood Flow to Basal Metabolic Rate. L. W. Eichna and R. W. Wilkins, Baltimore.—p. 512.
Rapid Method for Determination of Diodrast-Iodine in Blood and Urine. L. K. Albert, Baltimore.—p. 522.
*Changes Induced in Patients with Hyperthyroidism by Oral Administration of Desiccated Thyroid. W. T. Rienhoff Jr., Baltimore.—p. 543.

Desiccated Thyroid and Hyperthyroidism.—Rienhoff reports the preoperative exclusive treatment with desiccated thyroid in 9 cases presenting diffuse goiter with severe hyperthyroidism. The dosage consisted of 4 grains (0.26 Gm.) given daily by mouth in 1 grain (0.06 Gm.) doses. In all cases but one the administration of the drug did not extend beyond three weeks, when surgical intervention took place. One patient was treated with the drug for six months after a left lobectomy and then subjected to a right lobectomy. All patients recovered from the operation and remained well. No residual clinical signs or symptoms of hyperthyroidism were noted, and the basal metabolic rates were within normal limits. In 1 case, thyroid medication brought about the structural atrophy of the gland.

Bulletin New York Academy of Medicine, New York

17:487-564 (July) 1941

- Epidemic Encephalitis. R. S. Muckenfuss, New York.—p. 487.
Progress in Preoperative and Postoperative Care of Patients with Lesions of Biliary Tract. I. S. Ravdin, Philadelphia.—p. 500.
Chemical and Physiologic Properties, and Clinical Uses of Corpus Luteum Hormone, Progesterone. W. M. Allen, St. Louis.—p. 508.
Chemical, Physiologic and Clinical Aspects of Androgens. J. E. Howard, Baltimore.—p. 519.
Some Aspects of Common Contagious Diseases. P. M. Simon, New York.—p. 532.
Marriage of Medicine and Civil Government. H. Emerson, New York.—p. 548.

Canadian Public Health Journal, Toronto

32:287-338 (June) 1941

- Progress in Tuberculosis Control in Canada. G. J. Wherrett, Ottawa, Ont.—p. 287
Parasitic Infestations of Fish. J. D. Detwiler, London, Ont.—p. 293
St James St Vital Health Unit, Manitoba. I. M. Cleghorn, Winnipeg, Man.—p. 301.
Phenothiazine in Treatment of Enterobiasis. E. Kuitunen-Elbaum, Toronto.—p. 308
Single Colony Isolation of Anaerobes. L. Greenberg, Ottawa, Ont.—p. 314.

Cancer Research, Philadelphia

1:345-438 (May) 1941. Partial Index

- Effect of Estrogen on Incidence of Mammary and Pituitary Tumors in Hybrid Mice. W. U. Gardner, New Haven, Conn.—p. 345.
Tumors Produced by Estradiol Benzoate in Guinea Pig. L. M. Woodruff, New Haven, Conn.—p. 367.
Relation of Diet to Benign Neoplasia (Ulceroepitheliomas) of Rat's Stomach. A. Brunschwig and R. A. Rasmussen, Chicago.—p. 371.
Experimental Production of Fibrosarcomas of Bone. C. C. Franseen, J. C. Aub and Carol L. Simpson, Boston.—p. 393.
Cutaneous Neoplastic Responses Elicited by Ultraviolet Rays in Hairless Rats and in Their Haired Litter Mates. W. C. Hueper, New York.—p. 402.
Reticulum Cell Sarcoma of Rat Transferred Through Twelve Successive Passages in Animals of Related Stock. Florence S. Jenney, Pittsburgh.—p. 407.
Cancer Mortality in New York City; 1901 to 1938. T. J. Duffield and Marie Di Mario, New York.—p. 413.

Connecticut State Medical Journal, Hartford

5:479-554 (July) 1941

- Industrial Medicine. A. B. Landry, Hartford.—p. 481.
Early Medical Practice in Hartford County. S. B. Weld, Hartford.—p. 484
Diet and Bright's Disease. S. Weiss, Boston.—p. 496
Gastrointestinal Symptoms in Eye, Ear, Nose and Throat Disorders. S. H. Baron, New London.—p. 502.
Diagnosis of Cancer of Stomach and Colon. A. W. Oughterson, New Haven.—p. 506

Journal of Bone and Joint Surgery, Boston

23:497-752 (July) 1941. Partial Index

- Congenital Pseudarthrosis: Treatment by Dual Bone Grafts. H. B. Boyd, Memphis, Tenn.—p. 497.
*Use of Sulfathiazole in Treatment of Subacute and Chronic Osteomyelitis. F. D. Dickson, R. L. Dively and R. Kiene, Kansas City, Mo.—p. 516.
Adduction Traction in Trochanteric Fractures. T. A. Fox and G. L. Apfelbach, Chicago.—p. 552
*Use of Neosarsphenamine in Treatment of Acute Staphylococcus Aureus Septicemia and Osteomyelitis. J. F. LeCocq and E. LeCocq, Seattle.—p. 596.
Timing of Fracture Healing Process: Its Influence on Choice and Application of Treatment Methods. C. R. Murray, New York.—p. 598
Physiologic Scoliosis. A. Farkas, Iowa City.—p. 607.
Analytic Study of Bone and Joint Lesions in Relation to Chronic Pulmonary Tuberculosis. Ester Rosencranz, Angela Piscitelli and F. C. Bost, San Francisco.—p. 628
Spontaneous Fracture of Femoral Neck Following Roentgen Ray Therapy over Pelvis. D. Hight, Worcester, Mass.—p. 676.
Tuberculosis of Shoulder: Report of Four Cases Treated by Operative Fusion. J. A. Murphy, Cleveland, and C. Wood, Louisville, Ky.—p. 687.
Testicular Teratoma Metastasizing to Spine. R. K. Vosburgh and J. E. Alderman, Syracuse, N. Y.—p. 701.
Intercondylar T Fracture of Elbow. A. H. Trynin, Brooklyn.—p. 709

Sulfathiazole for Subacute and Chronic Osteomyelitis.

—Dickson and his associates report the favorable use of sulfathiazole in 22 cases of subacute and chronic osteomyelitis. (Hematogenous osteomyelitic foci numbered 18; in 4 cases osteomyelitis followed a compound fracture.) The oral use was accompanied with thorough débridement of the foci and the introduction of sulfathiazole powder into the wound. Eighty-two per cent of the lesions healed by primary intention. The average healing period lasted twenty-three days. The drug was administered by mouth on an average of five and nine-tenths days before surgery and fifteen days after surgery. The average daily oral dose was 0.11 Gm. per kilogram or 5 Gm. per hundred pounds of body weight. Though based on a comparatively small series of cases, the satisfactory results, both as to the type of healing and as to the healing period, commend themselves for further experimentation.

Neosarsphenamine for Staphylococcus Septicemia and Osteomyelitis.—The Lecocqs report the use of arsenic compounds, during the course of thirteen years, in 66 cases of acute fulminating Staphylococcus aureus septicemia and osteomyelitis. There were 44 males and 22 females, with an average age of 8½ years. The site of infection was most often the tibia and femur. Blood cultures were made in 53 of the 66 cases: the results here reported apply to this group. Thirty of them gave a positive reaction and 13 died. There were 40 recoveries (75.5 per cent).

Journal of Immunology, Baltimore

41:127-258 (June) 1941

- Studies in Contact Dermatitis: IV. Spontaneous Flare-Up of Negative Test Sites in Experimental Sensitization in Man. M. Grolnick, Brooklyn.—p. 127.
Study of Antigenicity of Proteoses. A. Stull and S. F. Hampton, New York.—p. 143
Immunologic Properties of Antigenic Material Isolated from Eberthella Typhosa. H. R. Morgan, Boston.—p. 161.
Subdivisions of Group A and Group AB: II. Isoimmunization of A₂ Individuals Against A₁ Blood; with Special Reference to Role of Subgroups in Transfusion Reactions. A. S. Wiener, Brooklyn.—p. 181.
Antigenic Differentiation Among Strains of Paramecium Aurelia. A. W. Bernheimer and J. A. Harrison, Philadelphia.—p. 201.
Electrophoretic and Ultracentrifugal Analyses of Antipneumococcal Horse Serums. J. van der Scheer, J. B. Lagsdin and R. W. G. Wyckoff, New York.—p. 209.
Effects of Enzymes on Ragweed Pollen and Studies on Isoelectric Point of Low Ragweed Antigen. G. E. Rockwell, Cincinnati.—p. 225.
Detoxification of Staphylococcal Toxin by Adsorption on Organic Liquids. J. M. Joblin and R. H. Rigdon, Nashville, Tenn.—p. 233
Studies on Measles: II Experimental Disease in Man and Monkey. M. F. Shaffer, G. Rake, New Brunswick, N. J.; J. Stokes Jr, and G. C. O'Neil, Philadelphia.—p. 241.

Journal Industrial Hygiene & Toxicology, Baltimore

23:217-276 (June) 1941

- Recovery Following Exposure to Benzene (Benzol). L. J. Goldwater and Margaret P. Tewksbury, New York.—p. 217
Effects of Inhalation of Benzene Vapors on Red Blood Cells of Rabbits. E. J. Robinson, Stamford, Conn, and D. R. Climenko, Rensselaer, N. Y.—p. 232.
Acute and Chronic Intoxications with Sodium Pentachlorophenate in Rabbits. T. H. McGavack, L. J. Boyd, F. V. Piccione and R. Teranova, New York.—p. 239.
Evaluation of Lead Hazard. Urinary versus Atmospheric Lead. H. B. Elkins, J. F. Ege Jr and B. P. Rhotolo, Boston.—p. 256.
Single Dose Toxicity of Some Glycols and Derivatives. H. F. Smyth Jr, Jane Seaton and Louise Fischer, Pittsburgh.—p. 259.
Inhalation of Filtered Carbon Arc Fumes and Oxides of Nitrogen. J. P. Tollman, E. L. MacQuiddy and S. Schonberger, Omaha.—p. 269.

Journal-Lancet, Minneapolis

61:253-302 (July) 1941

- "Last Staud of the Family Doctor." B. M. Hart, Onida, S. D.—p. 271.
*Protruded Intervertebral Disk: Some Practical Considerations. H. F. Buchstein, Minneapolis.—p. 278.
Fixation of Uterus to Abdominal Wall with Fascial Sutures. H. M. N. Wynne, Minneapolis.—p. 281.
Certain Phases of Nonoperative Treatment of Fractures. R. K. Ghoruley, Rochester, Minn.—p. 282.
Proposed Simple Method of Determining Clinical Hypersensitiveness in Allergic Patients. Preliminary Report. F. W. Wittich and S. M. Boyle, Minneapolis.—p. 285.
Relation of the Medical Profession to Selective Service. R. H. Eanes, Washington, D. C.—p. 287.
American Student Health Association and Public Health Program. J. Sundwall, Ann Arbor, Mich.—p. 292.

Protruded Intervertebral Disk.—According to Buchstein, protruded intervertebral disks in the lower lumbar region are now recognized as a leading cause of chronic, intractable sciatic pain. Increasing familiarity with the clinical syndrome produced by these lesions now permits diagnosis in most cases either on clinical grounds alone or with the aid of air myelography. Mild symptoms are frequently relieved by conservative measures, such as rest in bed and immobilization of the lower back. In the presence of severe and incapacitating symptoms or if the patient is unable to resume his occupation without a recurrence of symptoms, operative removal of the protruded portion of the disk and the overlying ligamentum flavum is indicated. This offers quick, complete and permanent relief in a high percentage of cases.

Journal of Pharm. & Exper. Therap., Baltimore

72:227-310 (July) 1941

- Toxicity and Actions of Trimethylene Glycol. W. Van Winkle Jr., San Francisco.—p. 227.
- Anesthesia: IV. Anesthetic Action of Cyclopropylethylether. J. C. Kranz Jr., C. J. Carr, S. E. Forman, W. E. Evans Jr. and H. Wolleweber, Baltimore.—p. 233.
- Further Studies on Fate of Selenium in Organism. B. B. Westfall and M. I. Smith, Washington, D. C.—p. 245.
- Absorption and Elimination of Phenolphthalein in Normal and Pathologic States, with Particular Reference to Liver and Kidney Diseases. B. Fantus, F. Steigmann and J. M. Dyniewicz, Chicago.—p. 252.
- Comparative Physiologic Actions of Phenyl-, Thienyl- and Fury-Lisopropylamines. G. A. Alles and G. A. Feigen.—p. 265.
- Method for Determination of 5,5 Diphenylhydantoin in Biologic Material. F. L. Kozelka and C. H. Hine, Madison, Wis.—p. 276.
- Distribution and Rate of Metabolism of 5,5 Diphenylhydantoin. C. H. Hine and F. L. Kozelka, Madison, Wis.—p. 280.
- Distribution, Excretion and Rate and Site of Detoxification of Metrazol. H. J. Talum and F. L. Kozelka, Madison, Wis.—p. 284.
- Mode of Action of Neoprontosil in Streptococcal Infections in Mice. J. T. Luchfield Jr., H. J. White and E. K. Marshall Jr., Baltimore.—p. 291.
- Effect of Sulfanilamide and Some of Its Derivatives on Reaction of Mice to Anesthetics. T. C. Butler, H. L. Dickson, W. M. Govier, C. M. Greer and P. D. Lamson, Nashville, Tenn.—p. 298.
- Further Observations on Action of Drugs on Caliber of Coronary Vessels: Papaverine Hydrochloride, Digitalis Derivatives, Aminophyllin, Caffeine, Glucose, Calcium Gluconate and Metrazol. E. Lindner and L. N. Katz, Chicago.—p. 306.

Journal of Thoracic Surgery, St. Louis

10:485-602 (June) 1941

- *Tuberculous Cavitation and Transpleural Decompression. H. Brunn, S. Shipman, A. Goldman and L. Ackerman, San Francisco.—p. 485.
- *Choice of Procedure in Treatment of Tuberculous Cavities: Considerations Regarding Intracavitary Pressure Based on Clinical Observations and Experiments on Cadavers. L. Eloesser, San Francisco.—p. 501.
- *Coronary Sclerosis and Angina Pectoris: Report of Thirty Patients Treated by the Deck Operation. H. Feil and C. S. Beck, Cleveland.—p. 529.
- Cinceroentgenographic Studies of Pulmonary Circulation, Chambers of Heart and Great Blood Vessels in Health and Disease. W. H. Stewart, C. W. Breimer and H. C. Maier, New York.—p. 541.
- Mechanism for Artificial Pulmonary Ventilation in Operating Room. F. R. Mautz, Cleveland.—p. 544.
- Complications of Extrapleural Pneumothorax. W. F. Hoyt and J. C. Tate, Springfield, Mass.—p. 551.
- Primary Multiple Alveolar Cell Tumor of Human Lung: Report of Case. K. Neuburger, Denver.—p. 557.
- Surgical Treatment of Recurrent Idiopathic Spontaneous Pneumothorax. M. D. Tyson and W. B. Crandall, Hanover, N. H.—p. 566.
- Comparative Action of Sulfanilamide, Sulfapyridine, Sulfathiazole, and Acetylsalicylic Acid (Aspirin) on Growth of Tubercle Bacillus in Vitro. J. G. Whithead, Baltimore.—p. 572.
- Historical Consideration of Diaphragm. H. C. Ballon, Montreal, Canada.—p. 576.
- Hemothorax: Its Relation to Primary Carcinoma of Lung. H. L. Cabitt, Boston.—p. 590.

Tuberculous Cavitation and Transpleural Decompression.—In necropsies of 100 cases of tuberculosis Brunn and his colleagues focused special attention on bronchi opening into cavities. Every cavity examined had from one to six open bronchi. Lesions in small bronchi suggesting an allergic reaction are found rarely. By continuous kymographic recordings of intracavitary pulmonary pressures in patients undergoing transpleural decompressive therapy they were able to show that changes in the intracavitary pressures are only infrequently related to the actual breathing of the cavity. In tension cavities this phenomenon seems to occur rarely during the daily activities of such a patient. The flow of air from the bronchus into the cavity does not occur bit by bit with each inspiration or expiration but at infrequent periods over the course of a few respirations. This leakage of air can be induced artificially by negative pressure. The bronchus-cavity relationship at most times is valvular, with the valve prohibiting the passage of air from cavity to bronchus. Kymographic tracings of intracavitary pressures show that: 1. In tension cavities respiratory fluctuations of pressure are caused by the pressures transmitted through the walls of the cavity from the surrounding lung. 2. But little actual flow of air in and out of tension cavities takes place through the bronchus. 3. In such cavities the valve formation is usually 100 per cent efficient in the cavity-to-bronchus direction. The pressures may be positive in both phases of respiration. 4. The valvular efficiency of a cavity-bronchus relationship changes during transpleural decom-

pression therapy. 5. Nontension cavity pressures may simulate normal bronchial pressures. 6. Nontension cavities have no demonstrable valve mechanism. 7. Of 20 transpleural decompressions on nontension cavities in 18 patients (2 bilateral cases) the treatment in 7 was not completed because of lack of cooperation, aggravation of the existing tuberculosis or tension pneumothorax. There were 3 deaths: 2 due to tension pneumothorax and empyema and 1 to a tuberculous pericarditis unrelated to the treatment. Two cavities are apparently permanently closed. The secretions from the cavities of 5 patients are negative for tubercle bacilli. The cavity of 1 patient is still open, the catheter has been removed and the sputum and secretions have been negative for six months. The cavities of 2 patients who had thoracoplasties after transpleural decompression was discontinued are still open. Of 4 patients who had thoracoplasties prior to transpleural decompression 1 is apparently cured, transpleural decompression is being continued in 1, the cavity of 1 is smaller but the secretions are still positive and the sputum of 1 is positive. According to the bronchus-cavity concept, the production and maintenance of certain cavities is dependent on the presence of bronchi-cavity valves which allow the passage of air in one direction only, i. e., toward the cavity.

Treatment of Tuberculous Cavities.—According to Eloesser, the three methods collapse, compression and aspiration, employed in the treatment of tuberculous pulmonary cavities, postulate such fundamentally different ideas of cavity formation and healing that he inquires why each has at times succeeded and at others failed to close certain cavities. He studied 5 cadavers with tuberculous cavities, 1 with severe bronchial stenosis and 2 with normal lungs. His observations indicate that even irregular, ragged walled cavities situated in a densely infiltrated, largely airless area of lung contain air which is under more than atmospheric pressure a considerable part of the time. This is true even under conditions of normal respiration. The observations were made on cavities with shaggy, necrotic walls. The bronchial communications were open, but not freely so; secretion, pus and shaggy bits of necrotic material were probably sufficient to block them partially part of the time, so that inflation by entrapped air may play a part in maintaining or producing these cavities. The lungs of the 2 normal cadavers were needled as controls. After a short period without manometric variations the water began to swing back and forth freely. This was found to be due to the formation of a small air space, a traumatic cavity. Air remained entrapped even in this little cavity, and the manometer, once it began to swing, failed to reach the base line but continually registered a few centimeters of positive pressure. The author has needled the cavities of more than 60 patients, in some repeatedly. Empyema, serious infection of the chest wall, hemorrhage or collapse has not been observed. His conclusions are as follows: 1. The pressure (which is higher than that of the atmosphere) in many tuberculous cavities varies accordingly as their communicating bronchi are temporarily open or blocked. 2. This pressure tends to keep cavities distended. 3. A respiratory pressure variation of intracavitary air does not prove that the communicating bronchus is open. Proof of a blocked communication is afforded if intracavitary pressure remains elevated while the patient holds his glottis open and stops breathing. 4. Provided no free pleural space exists, needling for the purpose of determining the type of treatment is legitimate and useful. 5. Thoracoplasty is not likely to be successful in collapsing a cavity with a high intracavitary pressure, but it may be closed temporarily by a single aspiration or by continuous suction drainage if it contains considerable pus. 6. In order to obliterate the cavity permanently, secondary thoracoplasty or drainage with a skin flap should follow suction. 7. Cavities may persist in artificial pneumothorax because of fixation by adhesions or intracavitary pressure. 8. Cavities held distended by adhesions should change their shape, and those held open by increased intracavitary pressure should not change with inspiration, expiration and changes in position. 9. Pneumolysis is not likely to close cavities which do not change their shape with postural changes or on inspiration and expiration.

Coronary Sclerosis and Angina Pectoris.—Feil and Beck present the follow-up data of 30 patients who had vascularized grafts placed on the heart in the hope of establishing a

collateral blood supply The diagnosis of coronary sclerosis was definitely established for all the patients On the usual medical regimen their tolerance for physical and emotional strain was greatly reduced There were no immediate operative deaths The total mortality was 33½ per cent; the mortality among the first 15 was 47 per cent Three deaths were caused by arterial thrombosis There were 3 sudden deaths, all of patients with severe generalized coronary atherosclerosis Bronchopneumonia was the cause of death of 3 patients and mediastinitis of 1 death The postoperative fatalities occurred within one to nine days There were 4 remote postoperative deaths 1 two and a half years after operation of manitton and a clinical picture resembling Simmonds' disease, 1 two years and three months later of cerebral hemorrhage, 1 one year and three months following operation of myocardial infarction, 1 patient with early cardiac failure due to hypertensive and coronary artery disease survived for six months and died of congestive failure Study of possible cardiac compression as the result of the postoperative scar was carried out in 10 patients, and in only 1 was the venous pressure elevated to 15 cm of physiologic solution of sodium chloride In the other patients the venous pressure at the elbow measured from 3 to 11 cm Study of roentgenograms revealed no diminution in the pulsation of the heart Signs of chronic postoperative cardiac compression were not found in any of the patients Thirteen (65 per cent) of the surviving patients were completely or almost entirely relieved, resuming their previous occupations This high percentage of improvement is encouraging, as preoperatively all the patients were seriously disabled

Kentucky Medical Journal, Bowling Green

39:231-264 (July) 1941

- Some Problems of Army Surgery C D Holmes, Fort Knox—p 235
Prevention and Treatment of Acute Respiratory Diseases at Fort Knox, Winter 1940-1941 A J Bayley, Fort Knox—p 238
Some Medical Phases of Selective Service W N Lipscomb, Louisville—p 240
Aviation Medicine G W Neece, Fairfield, Ohio—p 245
Some Recent Thoughts About Diabetes E S Wilson, Pineville—p 248
Nonoperative Gynecologic Conditions of Interest to General Practitioner E P Solomon, Louisville—p 250
Perforated Peptic Ulcer R A Griswold, Louisville—p 252
Meningitis, Pneumococcus Type III, with Recovery J Stites, A C Bell and F K Jelsma, Louisville—p 258

Laryngoscope, St. Louis

51:479-606 (June) 1941

- Physiology of Larynx Resume and Discussion of Literature for 1940 J L Pressman, Los Angeles—p 479
Progressive Deafness, Otitis and Closely Related Subjects Abstract of Available Literature Published During Year 1940 J A Babbitt and L E Silcox, Philadelphia—p 516
Plastic by Tracheostomy E I Matis Kaunas, Lithuania—p 565
Experimental Administration of Sulfapyridine to Guinea Pigs Infected with Human Tubercle Bacilli F R Spencer, R W Whitehead and G J Duffner, Denver—p 569
Indications for Surgery in Meningitis E King, Cincinnati—p 572
Pharyngomaxillary Fossa Infection Case Report R J Gaffney, New York—p 575
Osteogenic Fibrosarcoma of Temporal Bone H W Corya, New York—p 580
Meningitis and Temporal Lobe Abscess Secondary to Suppurated Petrositis Clinical Course with Sulfanilamide E R Snyder, New York—p 586

Medical Annals of District of Columbia, Washington

10:253-284 (July) 1941

- *Combined Alkaloid Treatment of Parkinsonism A Simon and J L Morrow, Washington—p 253
Rupture of Intestines from Nonpenetrating Injuries of Abdomen J R Veal and E B Barnes, Washington—p 259
Local Anesthetic Reactions H B Shumacker Jr, Baltimore—p 264
Typhus Fever in Washington Report of Case J L Thompson Jr, Washington—p 267
Sudeck's Acute Bone Atrophy Report of Case A J Mourou, Washington—p 269

Combined Alkaloid Treatment of Parkinsonism—Simon and Morrow report the use of a synthetic preparation containing 0.5 mg of alkaloids (hyoscyamine 0.45 mg, atropine 0.037 mg and scopolamine 0.012 mg) in 32 cases of parkinsonism for a period varying from two days to five and one-half months Twenty-five patients presented encephalitic parkinsonism and

7 had other extrapyramidal disorders In the postencephalitic group 14 were unimproved, 4 slightly improved and 7 moderately improved In the other group only 1 was slightly improved The symptoms ameliorated by the treatment were rigidity, gait difficulties, speech disturbances, salivation and tremor Subjective improvement was seen in the majority of cases Abnormal mental trends remained unaffected The authors discuss the details of this alkaloid therapy and the possible complications and toxic manifestations

Minnesota Medicine, St. Paul

24:517-612 (July) 1941

- State Association B J Branton, Willmar—p 529
Medical Testimony R A Stone, St Paul—p 532
Relationship of Voluntary Hospital Service Plans to Medical Practice P D Ward, St Paul—p 537
*Meningioma of Spinal Cord H F Buchstein, Minneapolis—p 539
Demonstrable Genitourinary Disease in Presence of Normal Urinary Findings W Elliott, Virginia—p 546
Sulfonamide Treatment of Gonococcal Urethritis O S Culp, St Paul—p 553
Intestinal Obstruction Due to Food H Mattson and E A Larson, Minneapolis—p 559

Meningioma of Spinal Cord—Buchstein reports 4 cases of spinal cord meningioma and describes the clinical and surgical aspects of these tumors Meningiomas constitute one fourth of all neoplastic spinal cord tumors They are solitary, benign growths, originating in the spinal meninges, which compress but do not invade the spinal cord Their symptoms are those of spinal cord tumors in general, consisting of varying combinations of nerve root pain and signs of spinal cord compression Most meningiomas of the spinal cord may be completely removed surgically with a gratifying restoration of function The risk attending such operations has been reduced by refinements of technique which necessitate accurate preoperative localization of the tumor The subarachnoid injection of iodized poppyseed oil is the most frequently employed localizing method and is the only effective method in many cases The presence of tumors can be determined by direct roentgenography, by multiple spinal punctures and by air myelography The author states that a tumor of the spinal cord may be suspected of being a meningioma when it occurs in the thoracic region of the spine in an adult female and has produced symptoms for from one to two years

Missouri State Medical Assn. Journal, St. Louis

38:221-266 (July) 1941

- Cancer of Gastrointestinal Tract Its Early Manifestations B R Kirklin, Rochester, Minn—p 221
Blind Pensioners in Missouri J F Hardesty, St Louis—p 223
Simple Tests for Rapid Differentiation of Barbiturates and Other Sedative Drugs H L Motley, Columbia—p 228
Inguinal Hernia Repair with Transplantation of Cord Through Internal Oblique Muscle C B Schutz, Kansas City—p 231
Menu for Dietary Management of Allergic Disease L P Gay, St Louis—p 233
Leiomyoma of Stomach Case Report P H Halperin, Kansas City—p 235
Selection of Hypertensive Patients for Treatment with Thiocyanate W L Ritter, Indianapolis—p 238

New England Journal of Medicine, Boston

224:1081-1120 (June 26) 1941

- *Experience with Electric Shock Therapy in Mental Disease A Myerson, with assistance of L Feldman and I Green, Boston—p 1081
*Tularemia in Imported Rabbits in Massachusetts D L Belding and Beulah Merrill, Boston—p 1085
Healed State of Periarthritis Nodosa Report of Case E R Blaisdell and J E Porter, Portland, Maine—p 1087
Orthopedics in New Hampshire E A Jones, Manchester, N H—p 1090
Diagnostic Roentgenology Flat Film of Abdomen, Myelography Air versus Iodized Oil, Fibrocystic Disease of Bone R Schatzki, Boston—p 1101

Electric Shock Therapy in Mental Disease—Myerson employed electric shock therapy in the treatment of 36 patients with affective psychotic disturbances The diagnosis was depression or depressed obsessive state in 24, was schizophrenia in 9 and chronic neurosis in 3 The average number of shocks, lasting from thirty to forty-five seconds, was between five and six For most patients a voltage of 70 with a milliamperage of from 350 to 500 delivered for one tenth second was sufficient to pro-

duce convulsive reactions. If the dose selected is insufficient, from ten to fifteen minutes should elapse before another is given, as tissue resistance diminishes after a treatment and returns to normal only after such an interval. There are few injuries if reasonable precautions are taken, and the general bodily reaction is not so disturbing as in metrazol shock, as the effect on the pulse rate and the blood pressure is less. Patients have less dread of the electric shock than of the metrazol method. The patient does not remember the shock itself. The dread that does exist is probably due to the general fear that is associated with being knocked unconscious. Of the 24 patients with depressions or depressed obsessive states, all but 3 showed moderate to well defined improvement or had remissions following electric shock. None of the 9 with schizophrenia treated were significantly improved so far as the essentials of the disease process are concerned. The conduct of 3 improved. Delusions became less conspicuous. However, the retreat and the ability to meet the situations of life were only transitorily changed for the better. One of the 3 chronically neurotic patients was unwilling to continue treatment after two shocks, because of the unpleasant transient failure of memory. The other 2 patients are still under treatment with results that are doubtful. They had resisted other forms of treatment.

Tularemia in Imported Rabbits.—Belding and Merrill state that tularemia has been introduced into Massachusetts by rabbits imported by game clubs and liberated to stock their covers. Infected rabbits have been found in shipments of cotton-tails from Missouri and Arkansas. Certification at the shipping source that the rabbits are from districts free of tularemia does not guarantee freedom from the disease. Since 1937, 24,689 imported rabbits have been liberated in Massachusetts. The first 3 endemic cases of human tularemia in this state have been reported since 1937. In the interests of public health further importation of rabbits should be prohibited by legislation, even though an endemic focus of tularemia appears to have been established.

New York State Journal of Medicine, New York

41:1315-1410 (July 1) 1941

Mental Hygiene Aspect of the Deferred Draft. L. S. Selling, Detroit.—p. 1339.

*Clinical Features of Endometriosis. L. A. Sutton, Albany.—p. 1343.
Operation of Genetic Factors in Pathogenesis of Mental Disorders. F. J. Kallmann, New York.—p. 1352.

Endometriosis.—Sutton discusses clinical features of endometriosis based on a study of 656 consecutive cases which represent 13.2 per cent of all abdominal gynecologic operations performed on this service. Regardless of its location, the endometrium frequently displays the same physiologic changes as normal uterine mucosa in its response to menstruation, pregnancy and menopause. It is this attempt on the part of ectopic endometrial tissues to respond to normal physiologic stimuli which produces the pathologic conditions and symptoms. The various forms of endometriosis are classified into four divisions: direct, indirect, extraperitoneal and postoperative. There were 491 instances of peritoneal or indirect endometriosis and 92 of direct endometriosis. The other two groups are not considered specifically. Peritoneal endometriosis is frequently an accidental finding with few or no symptoms, but in advanced cases it may produce significant pathologic changes in the pelvis and become an incapacitating disease. Peritoneal endometriosis is frequently a clinical rather than a microscopic diagnosis. Only by repeated excision of small implants, immediate fixation and microscopic confirmation can one learn to recognize the small early and late lesions. Peritoneal endometriosis is rare in women less than 20 years or more than 60 years of age. It is most frequent between the ages of 31 and 40 regardless of the marital status. Single women between 21 and 30 years of age show a greater relative incidence than married women of the same age. Direct endometriosis occurs much more frequently in the fourth and fifth decades and almost always in women who have had children; repeated pregnancies seem to predispose to its development. No nonmalignant condition other than peritoneal endometriosis pre-

sents such a possible wide distribution of lesions or more bizarre clinical features. Its principal symptoms are dysmenorrhea, pelvic pain and sterility, while the chief symptoms of direct endometriosis are uterine bleeding and occasionally dysmenorrhea. The treatment of peritoneal endometriosis should be conservative whenever possible, and particularly in women less than 40 years of age. Any operation that leaves ovarian tissue in situ is considered conservative. Direct endometriosis of sufficient degree to produce bleeding cannot be controlled by conservative measures, and hysterectomy is indicated.

North Carolina Medical Journal, Winston-Salem

2:275-320 (June) 1941

Medical Problems in North Carolina. H. B. Haywood, Raleigh.—p. 275.
Fitness for National Emergency. N. B. van Etten, New York.—p. 278.
*Potassium Thiocyanate in Treatment of Hypertension. V. S. Caviness, T. L. Umphlet, E. D. Peasley, T. A. Bell and G. H. Satterfield, Raleigh.—p. 283.

Frontal Lobes in Their Relationship to Ego and Future. W. Freeman and J. W. Watts, Washington, D. C.—p. 288.

Pancreatic Lithiasis with Report of Case. W. R. Stanford and T. H. Byrnes, Durham.—p. 291.

Chronic Atrophic Pylonephritis (Golblatt's Hypertension): Case Report. T. W. Baker, Charlotte; B. D. Moore, Mount Holly, and W. M. Scruggs, Charlotte.—p. 295.

Intravenous Ergotrate at End of Second Stage of Labor. W. B. Bradford and W. Z. Bradford, Charlotte.—p. 297.

Swimming Pool Sanitation. H. B. Gotaas, Chapel Hill.—p. 299.

Radical Perineal Prostatectomy for Carcinoma. J. E. Dees, Durham.—p. 302.

Gastric Hemorrhage and Andresen Diet. C. T. Smith, Rocky Mount.—p. 306.

Potassium Thiocyanate for Hypertension.—Caviness and his associates used potassium thiocyanate for the treatment of 120 hypertensive patients. The results in 68.9 per cent were good (a reduction of more than 15 per cent in the systolic and diastolic pressure), fair in 11.5 per cent (a reduction of more than 10 per cent) and poor in 17, or 19.6 per cent (a reduction of less than 10 per cent). The authors recognize the fact that potassium thiocyanate is not a cure for hypertension, yet it produces satisfactory reductions in pressure, stabilizes the pressure at a safe level, apparently frees the patients from the danger of vascular crises (apoplexy and cardiac failure) and with reasonable care minimizes the danger of attacks of angina of effort. The nature of the active principle substance in the blood is still not known. Five grains (0.32 Gm.) of potassium thiocyanate daily is the initial daily dose after breakfast. This dose is continued with the slightly limited diet and with a sedative for several weeks, during which time the concentration of potassium thiocyanate in the blood is determined once a week or more often. In some cases as the blood pressure drops it is preferable to decrease the dose rather than to stop the drug. Many patients will show a return to normal blood pressure after a few weeks of treatment and a blood potassium thiocyanate concentration little if any above the normal level for patients not on treatment. Some patients may require an increase in the dose. The authors do not increase the dose until the pressure has stabilized itself at the lower level effected by the initial dose of thiocyanate. The reasons are that (1) it is not advisable to reduce the pressure too rapidly, as too rapid reduction tends to produce headaches; (2) it is not advisable to make any drastic reductions in pressure because, if the systolic pressure drops too near the usual diastolic level, circulation may not be adequate, and (3) there is a cumulative action of this group of drugs, nitrite if it is being used. Furthermore, several days or weeks are required for full effects, and increasing the dose before a full effect has been secured would produce a more rapid drop in pressure than would be anticipated. The authors attempt to treat their patients with as low a blood potassium thiocyanate level as possible. Often satisfactory results were secured with relatively small increases in the blood levels of potassium thiocyanate. They rarely found it necessary to raise the potassium thiocyanate level above 9 mg. per hundred cubic centimeters of blood. Headaches, weakness and dizziness are relieved rapidly. The feeling of well being associated with the treatment is often quite rapid and may be independent of the response of the blood pressure. Tolerance to the drug has not developed.

Oklahoma State Medical Assn. Jour., Oklahoma City**34:235-280 (June) 1941**

- Irradiation Therapy of Skin Cancers. E. D. Greenberger, McAlester.—p 235.
Our Method of Care of Fractured Knee Cartilages. C A Gallagher, Oklahoma City.—p 237.
Further Experience with Pervagium X Radiation in Management of Carcinoma of Cervix. L S McAlister, Muskogee.—p 239.
*Neuroblastoma, with Special Reference to Its Roentgen Manifestations. A J. Ackermann, Oklahoma City.—p 241.
Giant Cell Tumor with Malignant Change. O. G. Hazel, L. K. Chont and W. M. Hull, Oklahoma City.—p 246.

Neuroblastoma.—Ackermann reports 4 cases of Hutchinson's type of neuroblastoma. The tumors represent a highly malignant variant of neoplasms arising from the sympathetic nervous system and are associated with extensive skeletal metastases. The roentgen appearance of the skeletal metastases is characteristic (destructive and proliferative osseous alterations), although several other pathologic conditions (congenital multiple bone syphilis, leukemia, lymphosarcoma, chloroma, erythroblastosis and Ewing's tumor) may have to be differentiated. The prognosis is grave. Irradiation has not affected the progress of the disease.

Pennsylvania Medical Journal, Harrisburg**44:1217-1376 (July) 1941**

- Position of Pediatrics in Present Day Practice of Medicine. B. S. Veeder, St. Louis.—p 1233.
Management of Tumor of Testicle. Study of Forty Two Cases. T. R. Fetter, Philadelphia.—p 1240.
Round Table Conference on Clinical Significance of Jaundice. H. J. Tumen, J. G. Reinhold, J. E. Rhoads and I. S. Ravdin, Philadelphia.—p 1251.
Medical Treatment of Glaucoma. T. H. Adler, Philadelphia.—p 1263.
Carcinoma of Vagina. R. W. Teahan and H. Wammock, Philadelphia.—p 1268.
Spontaneous Cerebrospinal Rhinorrhea. G. B. Jobson, Oil City.—p 1275.
Restoration of Function After Fractures of Humerus. J. P. North, Philadelphia.—p 1277.
Pathologic Aspects of Rheumatoid Diseases. J. Eiman, Abington.—p 1281.
Metabolic Aspects of Rheumatoid Diseases. C. W. Scull, Abington.—p 1286.
Experimental Etiology of Arthritis. W. I. Westcott, Doylestown.—p 1292.
Clinical Aspects of Etiology of Chronic Arthritis. C. H. Kelchner, Allentown.—p 1294.
Focal Infection in Rheumatoid Disease. T. F. Bach, Philadelphia.—p 1297.
Surgery in Rheumatoid Disease. D. B. Pfeiffer, Philadelphia.—p 1301.
Principles of Orthopedic Treatment of Arthritis. B. T. Bell, Philadelphia.—p 1304.
Coordination of Therapy in Arthritis. R. Pemberton, Philadelphia.—p 1306.
Study of Neonatal Mortality. R. M. Tyson, Philadelphia.—p 1313.
Acute Diverticulitis of Colon. A. A. Walking, Philadelphia.—p 1318.
Fractional Gastric Analysis in Newborn. Preliminary Report. J. A. Ritter, Philadelphia.—p 1321.

Philippine Medical Association Journal, Manila**21:119-172 (March) 1941**

- Influence of Climate Changes on "Interruptions" and "Relapses" in Leprosy. J. Manalang, Cullion.—p 119.
Organization of the Health Department of Quezon City. F. Z. Cruz, Quezon City.—p 127.

21:173-222 (April) 1941

- Protective Value of Different Types of Typhoid Bacteriophage in Mice. A. P. Roda and P. Saqueton, Manila.—p 173.
Traumatic Abdominal Catastrophe. B. R. Diño and W. M. Valdez, Manila.—p 177.
Evaluation in Thyroid Disease. H. W. Miller, Shanghai, China.—p 185.

Physiological Reviews, Baltimore**21:383-528 (July) 1941**

- Endocrines in Invertebrates. Berta Scharrer, New York.—p 383.
Organic Acid Soluble Phosphorus Compounds of Blood. G. M. Guest and S. Rapoport, Cincinnati.—p 410.
Nutrition of Fetus. A. S. G. Huggett, London, England.—p 438.
Circulation of Bile Acids in Connection with Their Production, Conjugation and Excretion. B. Josephson, Stockholm, Sweden.—p 463.
Physiology of the Gene. S. Wright, Chicago.—p 487.

Radiology, Syracuse, N. Y.**36:651-778 (June) 1941**

- Pseudofractures in Diseases Affecting Skeletal System. J. D. Camp and J. A. L. McCullough, Rochester, Minn.—p 651.
Excretory Urography for Children. Indications and Methods. G. M. Wyatt, Boston.—p 664.
Intravenous Urography in Upright Position. J. A. Bowen and E. L. Shifflett, Louisville, Ky.—p 672.
Roentgenology of Renal Tuberculosis. G. J. Thomas, T. L. Stebbins, Minneapolis, and S. T. Sandell, Oak Terrace, Minn.—p 678.
Irradiation in Dermatology. A. C. Cipollaro, New York.—p 684.
Roentgen Treatment of Myxomatous Cutaneous Cysts. H. W. Jacob and L. J. Freedman, Pittsburgh.—p 695.
Roentgen Therapy of Hemangiomas. T. M. Hodges, L. O. Snead and R. A. Berger, Richmond, Va.—p 700.
Roentgen Changes in Cranial Vault Accompanying Diseases Resulting from Metabolic Disturbances. H. F. Hare, Boston.—p 706.
Epidurography: Method of Roentgenologic Visualization of Protruded Intervertebral Disks. H. Sanford and H. P. Doub, Detroit.—p 712.
Induction of Multipolar Cell Division with X Rays and Its Possible Significance. P. S. Henshaw, Washington, D. C.—p 717.
Fractures of Vertebrae Following Metrazol Therapy. G. R. Krause and C. L. Langsam, Cleveland.—p 725.
Further Studies of Shoulder Joint, with Special Reference to Bicipital Groove. M. D. Sachs, Portland, Ore.; H. A. Hill, San Francisco, and E. L. Chuinard, Portland, Ore.—p 731.
New Roentgen Sign of Pyloric Obstruction. Roentgen Visualization of Stomach with Use of Contrast Mediums. M. Feldman, Baltimore.—p 736.
Ointment for Relief of Discomfort Due to Severe Irradiation Epidermitis. H. H. Ashbury, Baltimore.—p 739.

Rocky Mountain Medical Journal, Denver**38:417-496 (June) 1941**

- Toxemias of Pregnancy. E. C. Sage, Omaha.—p 434.
Problems of the Menopause. R. L. Faulkner, Cleveland.—p 439.
Care of the Premature Infant. C. J. Stettheimer, Denver.—p 443.
Recent Advances in Diagnosis and Treatment of Heart Disease. D. Deeds, Denver.—p 447.
Bacteremia (Bacillemia) in Tuberculosis. Review. A. P. Damerow and M. L. Cohn, Denver.—p 454.
Jaundice Caused by Lobar Pneumonia. A. E. Livingston and R. W. Moody, Denver.—p 458.

South Carolina Medical Assn. Journal, Greenville**37:133-162 (June) 1941**

- Medical Preparedness. J. E. Paulin, Atlanta, Ga.—p 133.
*Use of Powdered Sulfanilamide in Peritonitis: Report of Forty Five Cases. C. A. Kinney, Florence.—p 137.
The National Physicians Committee for Extension of Medical Service. W. Weston Jr., Columbia.—p 140.

Powdered Sulfanilamide for Peritonitis.—Kinney placed fine granular powder of sulfanilamide in the peritoneal cavity of 45 patients. The powder was first sterilized in a dry oven at 120 C. for thirty minutes. This did not alter its crystalline powdery form. For patients with generalized peritonitis 10 Gm. of the drug was used for the average adult of 150 pounds (68 Kg.). Age and weight modify dosage. For the child from a fourth to a half of the adult dose should be satisfactory. The drug was poured directly from the test tube in which it was sterilized into the abdomen, and it was spread as widely over the viscera and peritoneum as was possible. After the peritoneum was closed a small amount of the original 10 Gm. which was left in the test tube was sprinkled in the tissues of the abdominal wall. The wounds of all but 4 patients were closed without drainage. The recovery of patients whose wounds were closed without drainage was more rapid, their sulfanilamide blood level was higher and generally their convalescence was less stormy than of those whose wounds were closed with drainage. The high postoperative fever usually seen in generalized peritonitis was not encountered, and the temperature usually reached normal between the third and the sixth postoperative day. Duodenal drainage was necessary for only 7 patients. The tissues of the abdominal wall showed a tendency to heal much more rapidly than when sulfanilamide was not used, and it apparently promoted healing of the wound. There were no severe toxic symptoms or complications. Of the 45 patients treated 18 had ruptured appendices, 2 intestinal perforations from gunshot wounds, 1 an intestinal perforation from a fish bone, 1 a ruptured diverticulum, 4 gangrene of the small intestine with resections of from 2 to 6 feet of intestine, and 19 had tubo-ovarian abscesses with free pus. The only death of the series, giving a mortality of 2.2 per cent, was among the patients with ruptured appendices.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

64:1-92 (March) 1941

- Phenomenon of Myotonia. D. Denny-Brown and S. Nevin.—p. 1.
 Vitamins E and B₆ in Treatment of Muscular Dystrophy and Motor Neuron Disease. G. Fitzgerald and B. McArdle.—p. 19.
 Visual Object Agnosia, with Special Reference to Gestalt Theory. W. R. Brain.—p. 43.
 Significance of Lesions in Dentate Nuclei Apparently Consecutive to Disease of Frontal Lobes. G. E. Smyth.—p. 63.
 Unilateral Exophthalmos (Proptosis): Causation and Differential Diagnosis. G. J. Dixon.—p. 73.

British Journal of Ophthalmology, London

25:241-304 (June) 1941

- "Prognosis in Sarcoma of Uvea." T. R. Pahuva.—p. 241.
 Vitamin C (Ascorbic Acid)—Its Therapeutic Value in Inflammatory Conditions of Cornea. T. K. Lyle and D. W. McLean.—p. 286.

British Journal of Radiology, London

14:219-254 (July) 1941

- *Cancer of Bladder. R. Paterson.—p. 219.
 Integration of Radiation Dosage and Absorption of Energy in Tissue for X and Gamma Radiation. F. Hapley.—p. 235.
 Research into Physical Factors Concerned in Indirect Radiography: IV. Quantitative Estimation of Actinic Value of Afterglow of Fluorescing Screen. B. Stanford.—p. 244.
 Diaphragmatic Movement After Lower Abdominal Operations. G. F. Rees-Jones.—p. 247.
 Subcapsular Rupture of Kidney: Case Report. E. R. Williams.—p. 248.
 Further Experiments in X-Ray Screen Photography, 1,011 Subjects with Control Direct Radiographs. K. C. Clark and K. T. Poulsson, in collaboration with H. C. Gage.—p. 250.

Cancer of Bladder.—Paterson believes that, like cancer of the cervix, mouth and skin (of the face and hands), cancer of the bladder also lends itself to roentgen therapy and surgery. That this is not as yet accepted surgical practice is largely due to the fact that the scarcity of material has taken therapists a long time to work out satisfactory roentgenologic methods. The classification of cancer of the bladder from a roentgen and therapeutic point of view is best based on macroscopic study, which will reveal the tumors to be of three types: benign papilloma, noninfiltrating cancer and infiltrating cancer. The author outlines the pathologic and clinical features of each of these types. Roentgen diagnosis is usually based on contrast cystography, but "relief pneumocystography" seems to give considerable promise. Good roentgen therapy is to be preferred to surgery in all cases, even early, as a first treatment. Existing factors must govern the choice between radium and roentgen therapy. Cystoscopic implantation of radon seeds is condemned. Roentgen therapy to be curative requires the use of high dosage, small fields and special methods of beam direction. The author states that of 60 patients with cancer of the bladder treated between 1932 and 1935 by intravesical radium and followed up in five years 4 were not traced, 11 were alive and 10 of these were known to be well and symptom free. Of 33 patients with early and 31 with late involvement assessed at three years 58 per cent of the former and 7 per cent of the latter were alive. A further 17 patients were treated only by roentgen therapy; 1 of them could not be traced and 5 were well and symptom free two years after treatment. The author states that radical roentgen therapy is of too recent development for statistical survey, but even so these results are good considering that the group includes many palliative cases and treatments not planned on the present beam direction policy.

Edinburgh Medical Journal

48:433-504 (July) 1941

- Glycosuria in Pregnancy as Predisposing Cause of Vaginal Thrush, with Special Reference to Its Importance in Treatment of This Condition. W. G. Liston and Fanny B. Chisholm.—p. 433.
 Progress in Treatment of Malignant Disease. R. McWhirter.—p. 452.
 Observations on Tuberculosis of Larynx. G. E. Martin.—p. 470.
 Effect of Wartime Conditions on Administration of Tuberculosis Service. S. Laidlaw.—p. 488.
 Some Observations on Calcium Requirement Standards. J. P. McGowan.—p. 494.

Lancet, London

1:777-810 (June 21) 1941

- Nature of Disease in Infancy. J. C. Spence.—p. 777.
 *Compression Treatment of Crush Injuries of Limbs. D. H. Patey and J. D. Robertson.—p. 780.
 Xanthomatosis of Skeleton in Adult: Lipoidosis of Schüller-Christian Type. E. L. G. Hilton and K. Eden.—p. 782.
 Pelvic Hydatid Cyst. E. L. Nicolson.—p. 784.
 Hysteria: Theory and Practice in the Two Wars: Case. J. Rickman.—p. 785.
 *Local Concentration of Sulfonamide Compounds Inserted into Wounds. F. Hawking.—p. 786.
 Hairline Suturing in Casualty Work. J. Gordon.—p. 788.

Compression Treatment of Crush Injuries of Limbs.—On the hypothesis that the crush syndrome might be caused by the profuse leakage of blood constituents into a limb suddenly decompressed, the capillaries of which had temporarily lost their function through an impaired blood supply during the compression, Patey and Robertson treated 2 such patients by applying intermittent positive pressure up to 60 mm. of mercury to the edematous area. A special large blood pressure cuff and a passive vascular exercise motor were used. This constant mechanical massage of the injured tissue produced no ill effects. This argues against the presence of a toxic factor. Following treatment both patients had a greatly increased output of urine, softening and later disappearance of edema from the affected tissues, a fall to within normal limits of blood urea and recovery. The authors suggest that this treatment be given further trial in crush injuries and in patients who have had tourniquets left in position too long.

Local Concentration of Sulfonamides in Wounds.—After inserting a sulfonamide compound into experimental wounds, Hawking determined its concentration in the cavity of the wound adjacent to the site of its deposit, in the distal parts of the cavity and in living and dead tissue around the edges of the wound. He found that sulfanilamide will travel quickly from one part of the cavity to another and that it will diffuse slowly through dead tissue but that its local penetration into tissue with an active intact circulation does not extend more than 2 or 3 mm. The other sulfonamide compounds produced lower concentrations in the distal parts of wounds, the order of diminution being sulfathiazole, sulfanilylguanidine, sulfadiazine and sulfapyridine. Both sulfathiazole and sulfapyridine diffuse through dead tissue only at a slow rate and they resemble sulfanilamide in their restricted penetration into tissue with an intact circulation. The author concludes that (1) sulfanilamide will probably travel from the central cavity of the wound down into the crevices; when the wound is being dressed the drug should be well distributed; (2) sulfanilamide will penetrate slowly into fragments of dead tissue, and (3) it will not penetrate far into tissue with an intact circulation. Such tissue is reached more quickly by oral or intravenous medication. The disadvantages of sulfanilamide are rapid disappearance from the wound and lower bacteriostatic activity. Sulfathiazole persists in the wound for a longer period and its bacteriostatic activity is much higher, but it is expensive and of lower concentration and diffusibility. Sulfapyridine possesses no advantage compared with sulfathiazole but has the disadvantage of still lower concentration and of persisting in a wound so long that it might act as a foreign body. There is little indication that sulfanilylguanidine and sulfadiazine are any more suitable for local therapy than sulfanilamide or sulfathiazole. Sulfanilamide will probably be used most widely; it might be advantageous to reinforce it by adding from 10 to 50 per cent of sulfathiazole to it. The actual proportions should depend on experience and economy.

Medical Journal of Australia, Sydney

1:747-772 (June 21) 1941

- Cryptotrophic Factors in Nutrition. W. A. Osborne.—p. 747.
 Use of Pooled Human Serum for Treatment of Hemorrhage and Shock. Marjorie Bick and E. B. Drevermann.—p. 750.
 Use of Pooled Human Serum in Experimental Pertussis. E. A. North and G. Anderson.—p. 754.
 Trial of "Progyron" Therapy in Thyrotoxicosis. A. R. Robinson.—p. 756.

Schweizerische medizinische Wochenschrift, Basel**71:549-576 (April 26) 1941. Partial Index**

- *Principles of Cancerigenic Action of Tobacco. A. H. Roffo.—p. 549.
*Gas Gangrene Infection After Injections. M. Saegesser.—p. 552.
Pharmacologic Investigations on New Type of Substance for Reduction of Blood Perfusion of Mucous Membranes. R. Meier and R. Muller.—p. 554.
Privine: A New Preparation to Reduce Swelling of Nasal Mucosa. A. M. Hild.—p. 557.
Action of Privine on Normal and Pathologic Eye. J. Babel.—p. 561.
Clinical Study of Acromicria, Syndrome of Brugsch. M. Schachter and M. Wahl.—p. 563.

Cancerigenic Action of Tobacco.—Roffo reports experimental investigations on the cancerigenic action of tobacco. Three products were extracted from tobacco by means of fractionated distillation. The first was obtained at a temperature of 100 C. (212 F.), the second by gradually increasing the temperature from 120 to 350 C. (248 to 662 F.), the third by further heating of the residue. The last two products resembled tar. Rabbits in groups of 20 were subjected to painting experiments with each of the three products. The first product produced no lesions; the second and third produced papillomas which later developed into true carcinoma. Since only tobacco tar distilled at high temperatures produced cancerous lesions, nicotine was not involved in the cancerigenic effect because it is decomposed at temperatures of less than 100 C. (212 F.). Further studies on tobacco tar yielded a cancerigenic benzpyrene. Animal experiments with this substance proved it to be highly cancerigenic. Most of the animals died in from one to two years. The first lesions appeared more rapidly after treatment with the benzpyrene than with total tobacco tar. The author concludes that in view of the evident cancerigenic property of tobacco the smoking habit should be discouraged. Not all smokers develop cancer, apparently because a predisposition to cancer is the second required factor, and fortunately not all smokers have this predisposition.

Gas Gangrene Infection After Injection.—Saegesser discusses expert testimony rendered in a law suit involving fatal gas gangrene infection following an injection. The alcohol in which the syringe was stored was found to contain gas gangrene bacilli. The testimony presented insisted that it is general practice of clinics and practitioners in Germany to store syringes and cannulas for the purpose of disinfection in 70 per cent alcohol. Recent investigations proved that gas gangrene bacilli may remain alive in 70 per cent alcohol as well as in the syringes stored therein. Since this fact is not generally known it cannot be regarded as a punishable offense that in the case under consideration the syringes had been stored in 70 per cent alcohol for the purpose of disinfection. The question arises whether the practitioner can be charged with "inadequate care" if he continues to use alcohol to store his syringes. Kirschner advocates dry storage of syringes in single containers impermeable for germs. Each syringe and cannula should be used only once before it is newly sterilized. The author maintains that it is impossible to enforce uninterrupted sterility. The chain is likely to be broken between sterilization container and storage container, and between the storage container and the site of injection. The cause of the injection abscess is not a question of sterilization and storage of syringes and cannulas alone. Gas gangrene infection is more frequent after injections of caffeine, epinephrine and sodium chloride than after other substances. Since caffeine and epinephrine are frequently employed under conditions of haste, a mistake in asepsis might be involved. There is also the possibility that gas gangrene spores in the skin of the patient are rendered more virulent by these solutions. Files used for opening ampules have likewise been known to harbor gas gangrene bacilli. If the chain of sterility is to remain unbroken, the physician must scrub his hands as before an operation and sterilize not only syringes and cannulas but also ampules and files. The author accepts Kirschner's postulates for hospitals but not for the practitioner. The practitioner will reject Kirschner's demands not because of a lack of responsibility but because he knows from experience that the sterilization employed by him is adequate.

Policlinico, Rome**48:601-648 (April 7) 1941. Prac. Sec. Partial Index**

- *Hematogenic Acute Osteomyelitis: Treatment by Expectation. R. Grasso.—p. 601.
Diathermy Short Wave Therapy in Freezing. P. Stefanutti.—p. 426.

Acute Osteomyelitis.—According to Grasso, hematogenous acute osteomyelitis is not a primary disease of the bone but a localization of a general septicemia or septicopyemia. The author observed roentgen alterations in the bone in the course of grave acute hematogenic osteomyelitis in 10 children treated by early immobilization. Surgical interventions were performed late in the course of the disease. The limb was immobilized in a plaster cast which included the joint above and below the osteomyelitic focus. A local abscess developing in the course of the disease will probably open spontaneously and will heal. If it does not, it should be opened by a small incision late in its development. Roentgenograms taken early in the course of the disease showed large sequestrums which became absorbed later on as the bone acquired compactness. In some cases small sequestrums remained and were treated by a sequestrotomy three months after convalescence. The spontaneous course of the disease in the group observed suggests that early surgical intervention is useless and harmless. It lowers defense reactions and opens up new routes for the spread of the disease. Early immobilization prevents secondary septic metastases to bones and viscera, local infiltration, arthritis and spontaneous fractures. The period of hospitalization of patients treated by early immobilization is short, and the functional and cosmetic results are satisfactory. Chronic and recurrent forms frequent in cases treated by early surgery do not seem to develop after early immobilization.

Arch. Urug. de Med., Cir. y Especialid., Montevideo**18:149-268 (March) 1941**

- *Tattooing for Identifying BCG Vaccinated Children. D. Gómez and J. C. Etcheverry.—p. 149.
Continued Aspiration in Treatment of Digestive Fistula. J. E. Cendan Alfonso and J. P. Otero.—p. 211.

Tattooing BCG Vaccinated Children.—Gómez and Etcheverry practice systematically BCG vaccination of all infants born in the maternity hospital under their care. The infants are vaccinated on the first to third day after birth by the modified method of multiple puncture of Rosenthal. More than 2,000 infants were thus vaccinated in the course of the last year. Immediately after vaccination the infant is marked by a tattooed black spot on the plantar aspect of the big toe. The spot is made with indelible ink by the common puncture technic. The method will make it easy to identify them in the future and to estimate the duration of immunity.

Bahia Medica, Bahia, Brazil**12:1-40 (Jan. & Feb.) 1941. Partial Index**

- *Cancer in Schistosomiasis. Aggeu Magalhães and Barros Coelho.—p. 7.

Cancer in Schistosomiasis.—Aggeu Magalhães and Barros Coelho found among 2,014 necropsies in the Department of Pathologic Anatomy of Recife histories of 8 cases of liver cirrhosis with primary cancer. In 5 of these *Schistosoma mansoni* was present. The eggs of the parasites were encysted by the connective tissue in the portal spaces and did not come in contact with liver cells or with the tumor cells. The authors believe that the toxins of *Schistosoma mansoni* and not the parasite exert a cancerogenic effect in persons with predisposition to cancer. The virulence of the toxins depends on the thickness of the connective tissue capsule about the eggs. Primary cancer of the liver combined with cirrhosis and schistosomiasis is due to the toxins of *Schistosoma* which reach the liver by way of the portal blood. It is not dependent on the cirrhosis. Rectal schistosomiasis combined with rectal cancer is rare. Benign rectal tumors may develop from rectal schistosomiasis because the eggs stimulate an energetic connective tissue reaction causing the eggs to become encysted and the virulence of the toxins of the parasite to be greatly diminished.

Beiträge zur Klinik der Tuberkulose, Berlin

94:445-634 (May 3) 1940. Partial Index

Neuromuscular System of Lungs: Anatomic and Physiologic Investigations. W. Bronkhorst and C. Dijkstra.—p. 445.

Introduction to Spirography and Ergometry. L. Brauer and W. Wolf.—p. 504.

Quantitative Pulmonary and Circulatory Tests in Miners, with Special Reference to Silicosis. O. Zorn.—p. 544.

*Investigations of Tuberculous Bacillemia in Mother and Child Intra Partum. J. Gigl.—p. 619.

Tuberculous Bacillemia in Mother and Child During Birth.—Gigl investigated transmission of tuberculous infection from mother to the neonatal child by the culture and the biologic tests of the blood of 250 unselected pregnant women taken before, during and after delivery and the umbilical blood of their 250 newborn infants. In addition, viscera of 35 still-born children, partly macerated, were tested for tubercle bacilli. In only two pregnant women were bacilli found in the blood, but no clinical or roentgenologic evidence of the disease. The children were normal. The culture of the first mother, when injected into guinea pigs, produced a negative reaction; that of the second, though Pirquet's test had been negative, killed the animal within two months. Miliary tuberculosis was found in all organs. The blood of eleven other mothers showed no tubercle bacilli though their history demonstrated apex tuberculosis (9), facial lupus (1) and healed tuberculosis of the lung and spine (1). Tuberculous bacillemia was encountered in only 2 of the 250 newborn. The mother of the first presented insignificant foci in the lungs. The mother of the second child died five days post partum from miliary tuberculosis. Both of these children, now 5 years old, were repeatedly examined and are pronounced, morphologically and biologically, healthy. Tuberculous infection was found in 2 of the 35 stillborn children. A third disclosed only microscopic evidence of the disease. The mothers of these three had been tuberculous since youth. One of them died soon after delivery. Tubercle bacilli, latent in some otherwise not determinable focus, may become activated by the process of parturition and then carried into the blood stream. Observations of other workers that the offspring of mothers who have passed through a severe tuberculous infection may present no evidence, at birth or years later, of the disease are confirmed. Intrauterine or postpartum transmission of tubercle bacilli from mother to child is possible but rare.

Deutsche medizinische Wochenschrift, Leipzig

67:169-196 (Feb. 14) 1941. Partial Index

*Mechanism of Stimulation of External Secretion of Pancreas in Human Subjects. J. Hartmann.—p. 169.

Clinical Significance of Labyrinthine Hyperirritability, Particularly of Nystagmoclonus. G. Wilke.—p. 173.

Relations of Friedreich's Ataxia to Diabetes Mellitus. G. Köhne.—p. 177.

C Vitamin and Clinical Experience. W. Stepp and H. Schroeder.—p. 179.

Treatment of Whooping Cough with Ultrashort Waves. J. Wirth.—p. 183.

Use of Prostheses During and After Resection of Maxilla. O. Hofer.—p. 184.

Stimulatory Mechanism of External Pancreatic Secretion.—Hartmann reports observations on stimulation of the pancreas with the duodenal tube and olive oil. Theoretically, disturbances in the physiologic secretory mechanism can develop in the following manner: (1) by a reduction in the physiologic stimulus in the production of gastric juice, (2) by an increase in it, (3) by a reduction or increase in the irritability of the terminal nerve apparatus in the pyloric region, (4) by a disturbance in the secretin formation in the duodenum. In about 50 per cent of patients with achylia, stimulation with the duodenal tube or by olive oil disclosed a more or less reduced pancreatic ferment production. Neither clinical nor experimental investigations have demonstrated so far whether gastric hypersecretion influences the pancreatic function. That increased irritability of the nervous apparatus influences the pancreatic secretion has been demonstrated by the author and by other investigators. It is possible that inflammatory disorders of the small intestine are accompanied by increased secretin formation. When dysfunction of the pancreas has been demonstrated, it will rarely be possible to differentiate between

an organic lesion of the pancreas or secretory impairment. The therapy should be directed chiefly against disorders of the small intestine, secretory disturbances of the stomach and diseases of the organs adjoining the pancreas (cholecystopathias and disorders of the gastrointestinal tract), because they influence the pancreatic secretion. Administration of pancreatic ferments produces favorable results not only in case of hypofunction of the pancreas but also in cases of irritation. The ferments possess both a substitutional and a regulatory effect. The author observed a stimulating effect of large doses of pancreatic ferment even after severe organic impairment of the gland.

67:197-224 (Feb. 21) 1941. Partial Index

*Allergic Gastritis. K. Hansen.—p. 197.

*Raw Potato Juice in Feeding of Infants and Children. W. Catel.—p. 203.

Flexner Dysentery in Brittany and Its Treatment. H. Otto.—p. 205.

C Vitamin and Clinical Experience. W. Stepp and H. Schroeder.—p. 208.

Allergic Gastritis.—Hansen believes that some cases of gastritis are of allergic origin. The symptoms of allergic gastritis do not differ from those of other forms, but patients with this form or members of their families frequently exhibit symptoms suggestive of allergy. A large quantity of one of the presumably offensive antigens is given in addition to an otherwise indifferent meal. If severe symptoms of gastritis with vomiting, diarrhea or migraine, urticaria, bronchial asthma or shock symptoms develop, it is clear that the particular antigen is the cause of gastritis. Radical removal of this antigen from the diet is quickly followed by the disappearance of all symptoms. The author studied Vidal's crisis in 30 patients with definitely established allergic gastritis and in 50 persons who were either free from gastritis or had a nonallergic type. These two groups were subjected to roentgenoscopy of the gastric mucosa. In patients with allergic gastritis, roentgenoscopy was performed before the antigen-free dietetic treatment was begun, then after the symptoms had subsided, first with an antigen-free contrast medium and later with a contrast medium to which the antigen was added. Several graphs illustrate that Vidal's hemoclastic crisis can be elicited by exposure to the antigen. The third roentgenogram, the one following the contrast medium with antigen admixture, reveals motor unrest of the stomach from five to fifteen minutes after the ingestion. Peristalsis is greatly increased and there is hypersecretion, pylorospasm, antiperistalsis and, in severe cases, vomiting. Bronchial asthma, migraine and urticaria may develop. The most frequent cause of allergic contact gastritis is milk and eggs, less often fish and rarely flour. The author is unable to ascertain the proportion of gastritides of the allergic type but estimates it to be at from 20 to 30 per cent. In gastric and duodenal ulcer about the same percentage of allergic cases has been assumed. The causal connection between allergic gastritis and ulcer is probable in some cases. The knowledge that many ulcer patients have a nutritive allergy necessitates a fundamental change in the customary ulcer diets. The diet must be individualized on the basis of antigen tests.

Raw Potato Juice.—Catel fed raw potato juice to infants and children. Unpeeled potatoes, thoroughly brushed in cold water, were grated, and the pulp was pressed out and placed in an ice box for one hour in order to deposit the dissolved potato starch. Vitamin A could not be demonstrated in the raw potato juice. The vitamin C content decreased somewhat with the age of the potatoes. Storage of the juice likewise decreased the vitamin C content. Freshly prepared juice is best and should be used on the day it is prepared. The juice was given to premature infants as a supplement to bottle feeding; the daily quantity varied between 10 and 20 cc. For infants between 2 and 4 months the daily dose was 25 cc., and for older infants up to 60 cc. Young children and children of school age were given the juice diluted with equal parts of water or milk and slightly sweetened. The daily quantity of the mixture was between 100 and 200 cc. Administration in this form encountered few difficulties. Gastrointestinal disorders occurred in a few of the young children but not in infants. The author emphasizes not only that the raw potato juice is a cheap source of vitamin C but that it contains vitamin B₁ and B₂, as well as proteins, carbohydrates and minerals.

Medizinische Klinik, Berlin

37:241-268 (March 7) 1941. Partial Index

- Dietetic Problems in Gastritis and Ulcer. D. Jahn.—p. 241.
*Treatment of Epididymal Tuberculosis. E. Meyer.—p. 244.
Occupational Diseases Caused by Industrial Solvents. B. Kemkes.—p. 246.
Results of Diagnosis of Diphtheria with Claiberg-Herrmann Plate. O. Ernst.—p. 251.

Treatment of Epididymal Tuberculosis.—The only promising treatment, according to Meyer, is epididymectomy. Semicastration is reserved for the advanced cases in which the testis is largely destroyed or in which radical surgery would interfere with the vascularization of the testis. Except in military tuberculosis and in the case of children, tuberculosis of the male gonads always begins in the tail of the epididymis. This and the fact that the process develops slowly and attacks the testis late explain why epididymectomy is adequate in the early stage. Epididymectomy obviates the prolonged fistulous supuration or prevents it and greatly shortens duration of the disease. The operation is simple and can be performed under local anesthesia. It preserves the secretory testicular function provided the artery has not been injured. The only contraindication to the surgical treatment of tuberculous epididymitis is a greatly impaired general condition. In from 15 to 30 per cent of the surgically treated cases involvement of the other side is to be expected. The value of early epididymectomy is proved by the fact that occurrence on the other side is twice as frequent in the advanced cases in which semicastration becomes necessary. To prevent occurrence on the other side, one may resect the spermatic duct of the opposite side at the first operation. This does not prevent hematogenous infection of the remaining epididymis, but it prevents intracanalicular infection. None of the local conservative methods equal the efficacy of surgical treatment. Operation alone is not sufficient. A general hygienic-dietetic regimen and supervision for a number of years are necessary.

Münchener medizinische Wochenschrift, Munich

88:209-236 (Feb. 21) 1941. Partial Index

- Objects and Problems of War Surgery During Action. M. Ernst.—p. 209.
*Etiology of Epidemic Keratoconjunctivitis. E. Gildemeister and H. Peter.—p. 213.
Is Epidemic Keratoconjunctivitis of Diphtherial Etiology? A. Nagel.—p. 216.
*Occurrence of Typhoid Bacteria in Blood During Incubation Period. H. Preuss.—p. 218.
Technic of Intracutaneous Tuberculin Reaction and Determination of Threshold for Tuberculin. Ickert-Stettin.—p. 219.
Rhythmic Mechanical Pressure Fluctuations in Abdominal and Thoracic Cavity and Their Importance for Life and Organ Function (Blomtor). R. Eisenmenger.—p. 223.

Etiology of Epidemic Keratoconjunctivitis.—According to Gildemeister and Peter, keratoconjunctivitis, which appeared in Germany in epidemic form in 1938, was readily transmissible; physicians and nurses often developed it. Although the disease is probably not new, there is no record that it ever occurred with such high frequency. Attempts to explain its etiology failed, for neither bacteria nor a virus could be identified as the causal agent. Behr and Zeissler found in the ocular secretions of patients with keratoconjunctivitis bacteria showing morphologic, cultural and biochemical characteristics of diphtheria bacilli and giving positive results in animal experiments. The pathogenicity of these bacilli is slight; however, instillations or injections of diphtheria serum exerted a favorable therapeutic effect. Behr concluded that keratoconjunctivitis is caused by true, although weakened, diphtheria bacilli. Zeissler submitted 13 of the bacterial strains to the authors. With one exception bacteria isolated by Zeissler were found to be not true diphtheria bacilli; they belong to the group of pseudodiphtheria bacilli and they do not show uniform characteristics. The authors reject Behr's opinion that epidemic keratoconjunctivitis is caused by diphtheria bacilli. They believe that the therapeutic results obtained with diphtheria serum were due to the nonspecific effect.

Typhoid Bacilli in Blood During Incubation Period.—Preuss states that culture of typhoid bacteria from blood is one of the most reliable aids in the early diagnosis of typhoid.

He reports a case in which cultures yielded typhoid bacilli from the blood four days before there were symptoms. In investigations for detection of typhoid carriers it is advisable to study not only blood serum for agglutinins but also the blood clot for the presence of bacteria.

88:321-352 (March 21) 1941. Partial Index

- War Experiences in a Field Hospital. U. Wolff.—p. 321.
"Exogenically Stimulated Endogenic Reinfection" of Tuberculosis in Decisions on Military Service Injuries. S. Graff.—p. 324.
*Peptic Ulcer and Angina Pectoris. M. Hochrein and I. Schleicher.—p. 328.
Practitioner and Carcinoma of Cervix Uteri. H. Hinselmann.—p. 334.
*Lipodystrophy and Lipohyperplasia After Injections of Insulin. W. Beckert.—p. 336.
Multifocal Cystoma of Lower Jaw. O. Ziegler.—p. 338.
Influenza Myositis. J. Korth.—p. 339.

Peptic Ulcer and Angina Pectoris.—Hochrein and Schleicher believe that the same mechanism operates in peptic ulcer and in angina pectoris. This pathogenic mechanism is a defective vasomotor regulation of the peripheral blood perfusion, designated as neurocirculatory dystonia. In stenocardia, as in ulcer, hereditary constitutional predisposition is apparent. There is a general nervous hyperirritability. There are vegetative disturbances such as a tendency to constipation, diarrhea, meteorism and excessive sweating and vasomotor disturbances in the form of headaches, insomnia and cold extremities. Occasionally this picture is supplemented by hypochondria, depression and hyperirritability. The vagus tonus predominates. This becomes manifest in a tendency to bradycardia, hypotension and respiratory arrhythmia. Angina pectoris, as well as ulcer, is especially frequent in men. The authors cite clinical observations which corroborate the close relationship between peptic ulcer and coronary insufficiency, pointing out that disturbances in the cardiac blood perfusion, palpitation, sensation of oppression and cardiac pain are frequently observed even in young ulcer patients. Electrocardiographic studies on 100 ulcer patients with and without cardiac symptoms revealed that, like coronary insufficiency, ulcer is frequently accompanied by deformities in the ST interval and the T deflection. The authors illustrate the significance of vagus neurosis in neurocirculatory dystonia by the description of cases of stenocardia and peptic ulcer in the presence of hiatus hernia or of esophageal diverticula. Neurocirculatory dystonia can be demonstrated by testing the thermic reflex irritability. Excessive or paradoxical vascular reflexes to thermic stimuli indicate neurocirculatory dystonia.

Lipodystrophy and Lipohyperplasia After Insulin Injections.—Beckert states that lipodystrophies and lipohyperplasias as a result of insulin injection are not as rare as is generally believed. Examination of 169 diabetic patients who had received insulin for more than four years revealed these disorders in 59 (approximately 35 per cent). Lipodystrophy was seen in 37, lipohyperplasia in 15 and both conditions in 7. The majority (71.2 per cent) were women. The changes in the fat tissues occurred at the sites of injection, but in a few cases atrophies were noticeable in areas where insulin had never been injected. Predisposition, use of the same site for injection, large doses of insulin and trophoneurotic disturbances are considered chief causes of these peculiar changes in the fat tissue. If the site of injection is changed, the lesion often disappears.

Wiener klinische Wochenschrift, Vienna

54:239-258 (March 21) 1941

- Asthma Remedies. R. Rössler.—p. 239.
Chemotherapeutic Progress in Treatment of Meningitis. S. Unterberger.—p. 242.
*Diagnostic Value of Gordon's Test for Hodgkin's Disease. E. Lauda.—p. 244.
*Method of Estimation of a Depot Insulin (Native Insulin). F. Leybold.—p. 246.
Distant Radium Irradiation. E. Maier.—p. 249.

Gordon's Test in Hodgkin's Disease.—Lauda suggests that Gordon's test for Hodgkin's disease is of little diagnostic importance. The characteristic lesion in the nervous tissue of rabbits or guinea pigs following the intracerebral injection of lymph node material is due to the presence of eosinophils in the tested material. The Gordon test has a certain degree of

specificity, because in many cases of Hodgkin's disease the granulation tissue has a characteristic eosinophilia, whereas eosinophilic elements are practically absent from human lymph nodes. In myelosis with myeloid and eosinophilic transformation of the lymph nodes positive rabbit tests are obtained and even in a case of carcinomatous metastasis of lymph nodes in which microscopic examination disclosed eosinophils Gordon's test was positive. Liebegott's studies on 31 cases of Hodgkin's disease likewise demonstrated the strict dependence of Gordon's test on the presence of eosinophils. Statistical reports reveal that Gordon's test is positive in only from 60 to 80 per cent of cases of Hodgkin's disease and the author obtained positive Gordon tests in only 2 out of 8.

The Value of Depot Insulin.—Depot insulins, according to Leypold, reduce the number of injections, produce a more uniform blood sugar curve and increase the carbohydrate tolerance, but their use involves certain disadvantages, such as insidious hypoglycemic attacks, poor local tolerance and possible sensitization and anaphylaxis due to the protein addition. His experience with "native insulin," a depot insulin containing the native protein-insulin complex of the pancreas, covers a period of six months in 82 patients. The local tolerance for the native insulin was good and the substance produced a uniform and prolonged reduction in blood sugar. Insidious hypoglycemic attacks were absent. A change to native insulin should be tried in patients who exhibit a tendency to hypoglycemic attacks.

Acta Medica Scandinavica, Stockholm

107:107-178 (April 23) 1941. Partial Index

Pure Heparin for Prevention and Treatment of Thrombosis. E. Jorpes. —p. 107.

Heparin as Prophylactic Against Postoperative Thrombosis. C. Crafoord. —p. 116.

Use of Heparin as Prophylactic Against Thrombosis Following Gynecologic Operations. P. Wetterdal. —p. 123.

Use of Heparin in Obstetric Practice as Means of Preventing Thrombosis. H. Leissner. —p. 127.

*Pulmonary Embolism Following Confinement, Treated with Heparin: Three Cases. S. Clason. —p. 131.

*Early Diagnosis of Venous Thrombosis by Means of Venography and Abortive Treatment with Heparin. G. Bauer. —p. 136.

Heparin for Pulmonary Embolism.—Clason reports 3 cases of postpartum embolism, 2 of which were extremely serious, in which treatment with heparin was successful. He does not contend that heparin directly saved the lives of the patients, but it did prevent further attack and it shortened the course of the disease considerably. The cases suggest that heparin can be used in simple pulmonary embolism and in pulmonary embolism with toxicosis. In no other instance of embolism—except when the patient dies immediately—has the author been so convinced that the prognosis was hopeless as he was in 2 of his 3 cases. In the first case heparin was resorted to as a last resort, and in the other case heparin was tried on the ground that a substance natural to the body would be less dangerous in toxicosis than any pharmaceutical ordinarily used, and that an increased blood percolation should be expected to be valuable whatever the nature of the disease.

Venous Thrombosis and Venography.—Bauer states that venography offers a reliable method for the diagnosis or rather for the anticipation of venous thrombosis. This is important because experience shows that patients with fully developed thromboembolic manifestations are not benefited by heparin treatment to the same extent as the early cases. Venography presents a surer and earlier diagnostic method. One must obviously be exceedingly watchful. The examination must not be put off until cleancut clinical symptoms have developed. "Thrombosis-threatened" patients cannot be venographed at random. The right procedure is to keep these patients under strict supervision. The signs that must be heeded are the slightest unexplained rise in the pulse rate or temperature, any unaccountable general restlessness, the least sign of pulmonary infarction, a transitory aching in the calf, slight changes in the tint of the skin, a slight change in the consistency of the calf muscles and/or a tender spot on the back of the lower leg. The last mentioned sign is perhaps most pathognomonic of all

early symptoms of thrombosis. With all these signs the uncertainty is considerable, but with venography in such cases a certain diagnosis is obtained in cases which otherwise would only be suspected. Usually in the venogram there will then be found an absence of opaque filling in one or all of the deep veins of the lower leg, and, with that, not only is the diagnosis assured but objective photographic evidence is obtained. Should a normal venogram be obtained—this has occurred in about one fifth of the author's cases—the possibility of thrombosis is excluded and with it all false conclusions respecting the result of a therapy instituted on a mere likelihood of thrombosis. Venography provides one of the requisites for successful heparin treatment. Heparin has no direct effect on thrombotic masses that have already entirely filled the vascular lumen and begun to involve the wall. On the other hand, it is able to prevent a propagation of these masses. Within a thrombosed lower leg, changes characteristic of the former stage are probably already present and no great benefit is to be expected from heparin. According to the author's experience, obliteration of the deep veins has no noteworthy significance if it is confined to the lower leg. Occlusion of the veins of the thigh may be prevented by heparin therapy. If on venography the femoral vein is found to be well defined and there are no thrombotic masses in it, immediate treatment with heparin ought to prevent such masses from appearing. The author states that that is what actually happens. He presents comparative results in 21 patients treated with the substance and in 32 not so treated. An early thrombosis of the lower leg had been venographically demonstrated in the 32 patients not given heparin. These patients received no heparin but in other respects were treated in the generally accepted way. The thrombotic process remained localized to the lower leg in only 25 per cent of the cases; the femoral vein of 75 per cent was also attacked and a pronounced phlegmasia alba dolens followed. In 31 per cent the thrombosis became bilateral, in 16 per cent an extension of the process was observed to the great pelvic veins and in 1 death ensued because of thrombosis of the portal vein. A further 34 per cent had larger or smaller pulmonary infarcts and in 1 there was a lethal pulmonary embolism. The average time in bed of these control patients after the thrombosis was diagnosed was forty-three days. In contrast to the foregoing, there were no failures or dubious results among the 21 heparin treated patients. Without exception the temperature and pulse curves, which were commencing to rise, became normal again within two to four days, and within this time nearly all tenderness on palpation of the lower leg, all swelling and aching vanished. The patients were usually able to get up from six to seven days after the diagnosis was made, provided the primary disease did not prolong their stay in bed. Spread of the thrombosis and pulmonary infarcts were not observed. As a rule the patients required heparin administration for only three to five days and after this time were regarded as cured. The results suggest an abortive treatment of thrombotic disease. The heparin was given three times a day in 100 mg. doses.

Nordisk Medicin, Stockholm

10:1109-1190 (April 12) 1941

Norsk Magasin for Lægevidenskapen

Case of Hysterical Dermatitis. T. Aalvik. —p. 1129.

Simple Hemorrhagic Proctitis. P. Oweren. —p. 1132.

*Two Cases of Blood Type A₂ (Friedenreich): Subtypes of A and Blood Transfusion. O. Hartmann, K. Hadland and J. U. Lundvall. —p. 1136.

Blood Type A₂ and Transfusion.—Hartmann and his associates conclude that, while grave complications are not probable in transfusion between the subtypes of A, minor reactions may occur, and in some cases the transfused blood corpuscles may be somewhat less viable than when the transfusion is from the identical subgroup. They recommend that if possible the donor should be of the same subtype as the recipient, particularly if the recipient possesses agglutinins of a₁ or a₂ type, which is most often the case in the AB group. For recipients of A₂ type O blood or A₂ blood is advised rather than A₁ blood if donors of the same type are not available.

Book Notices

Industrial Research Laboratories of the United States Including Consulting Research Laboratories. Compiled under the Supervision of Callie Hull for the National Research Council. Bulletin of the National Research Council, Number 104, December, 1940. Seventh edition. Cloth. Price, \$3.50. Pp. 372. Washington, D. C.: National Research Council, National Academy of Sciences, 1940.

This edition of the National Research Council's directory of industrial research laboratories of the United States follows closely the pattern set by the previous bulletins. There are two thousand, two hundred and sixty-four entries, including consulting laboratories. In connection with each, information is supplied about personnel and the outline of research activities. Admission to listing occurs under the two major classifications of scientific investigation and industrial development. Not infrequently, industrial research units are maintained for both purposes. In addition to its value for convenient reference, the data compiled in this volume will be used to construct a history of industrial research in the United States.

Three Transactions on the Cerebrum: A Posthumous Work. By Emanuel Swedenborg. Now First Translated and Edited from a Photostat Copy of the Original Manuscript Preserved in the Royal Swedish Academy of Sciences. By Alfred Acton, M.A. D.Th., Dean of the Theological School of the Academy of the New Church. In Three Volumes, Including One Volume of Plates. Cloth. Price, \$12 per set. Pp. 1,203; 179. Philadelphia: Swedenborg Scientific Association, 1938, 1940.

This translation of Swedenborg's main scientific work, *De Cerebro*, consisting originally of one thousand, four hundred and ninety-four pages, of which two hundred and eighty-two pages were lost, was made, according to the dedication page, "in commemoration of the two hundred and fiftieth anniversary of the birth of Emanuel Swedenborg, Philosopher and Seer."

Read in the light of Swedenborg's background and his avowed purpose in writing it, the *Cerebrum* is an interesting document. Military engineer, assessor of mines, member of the House of Nobles, Swedenborg was as versatile in his "scientific" interests as he was zealous in the performance of his official capacities. He published books on mathematics, physics, chemistry, geology, anatomy, physiology and cosmology. The very prolificacy of his writing means that much of what he had to say is necessarily but a digest or compendium of the work of others. In the *Cerebrum*, however, much of the material is based on his own observations or is the expression of what he terms "induction." As to his purpose: In an earlier book, the *Infinite* (published in 1734, four years before the *Cerebrum*), he stated as his thesis that the soul is organic, with its seat in the cortex. The first volume of the *Cerebrum* was written to demonstrate and prove the validity of this thesis.

The first volume (one thousand, two hundred and three pages) discusses the anatomy of the brain in terms of the cortical substance, the blood vessels within the cerebrum, the dura mater, the various blood sinuses, the medulla and so on. In each section the anatomic discussion is followed by conclusions, called "inductions," based on these data. The second volume (one hundred and seventy-nine pages) discusses the dura mater in like manner. These "inductions," which might more accurately have been termed "intuitions," are sometimes palpably false, sometimes remarkably penetrating. For example, Swedenborg states, "It is indeed the cerebrum itself that dispenses its blood; nor does the promotion of the blood depend in any way upon the heart, excepting in the circumstance that its systolic animation coincides with the moments of the vibrations of the heart. . . . In anger, indignation, courage, intentness, it admits an abundance of blood . . . ; but in sadness, grief, fear, it admits only little [p. 102]. . . . Inasmuch as the dura meninx [p. 190] is elastic and sensitive, therefore it is furnished with tendons and nerves. . . . That the brain commands and draws to itself such quantity and quality of blood and essence as its animal and sensual life requires [p. 381]. . . . That by the force of the animation of the two brains and two medullas . . . all vessels contained within the cranium and vertebral sheath are opened and constricted [p. 401]. . . . That the purely animal spirit is nothing else than the uttermost degree of the cortical or cineritious substance which, when released from its matrix, flowed in the purest fibers of the

nerves, and also in the blood, of which it constitutes the inmost and genuine essence [p. 725]." On the other hand, more than two hundred years ago Swedenborg emphasized the concepts which only in relatively recent years have come to the fore; namely, that the pyramidal cells in the cortex are connected by fiber pathways to the peripheral organs and that the cortex is the super coordinator for many specialized functions subserved by specialized lower centers. The third volume, to which references are made in the first two volumes, contains many interesting anatomic plates from such authors as Bartholin, Eustachius, Malpighi and Leeuwenhoek.

The translation, made by Alfred Acton, dean of the Theological School of the Academy of the New Church, is literal, painstakingly careful, and able. The *Cerebrum* will be of interest not only to the followers of the esoteric cult of which Swedenborg was the founder but also to students interested in the history of neurologic development.

The Voice Governor: Give It a Chance. Correct Body Mechanics Does It. By Ralph M Harper. Cloth. Price \$2. Pp. 142, with 40 illustrations. Boston: E. C. Schirmer Music Co., 1940.

This book is obviously a labor of love. The author states that the observations on which it is based were those of his late voice teacher, the result of study extending over a period of seventy years, and that it took him twenty-seven years to assemble the material. There is little new in the material except for the author's somewhat original nomenclature (the "governor," the "vowel hinges," the "consonant pivots," the "diamond," the "lock") and his style of presentation. His thesis is, in brief, that good posture and abdominal breathing, under the control of the "governor," are fundamental to good speech and song. The "governor," the vital area, is a little spot located at the center of the epigastric triangle (half way between the tip of the ensiform and umbilicus) that bulges "like a tense little drumhead." It is "not only a point of equilibrium of respiration; it is a thermostat registering extremes of emotion; it is also a sensitive tambour recording the action of the nerve impulses for the production of sounds." The book is divided into three parts: part 1, "A New Analysis," devoted to a discussion of correct body mechanics and to several chapters on phonetics; part 2, "Discovery," which describes the results of laboratory work in "demonstration of the proper use of the whole body for the production of a beautiful voice," and part 3, "How to Study," suggestions for the speaker and singer. The book is liberally illustrated with figure studies of faulty and correct posture, diagrams and roentgenograms. The speaker, singer and voice teacher will find this small volume interesting not so much because of anything new as because of the amount of incidental material that is here gathered together. It is presented in a friendly, informal style, a style which, one feels, reflects the personality of the author.

Le métabolisme de l'azoté: La physiologie des substances protéiques. II. Dégradation, synthèse, métabolisme intermédiaire. Par Emile F. Terroine, professeur à l'Université de Strasbourg. Fascicule 1: Le catabolisme protéidique. Caractères, conditions, mécanismes généraux, agents exécutants et régulateurs. Les problèmes biologiques, XXIII. Paper. Price, 40 francs. Pp. 164, with one illustration. Paris: Presses Universitaires de France, 1939.

In this monograph the well known investigator aims to present a comprehensive, systematic and detailed summary of all the factors known about the degradation of endogenous and exogenous proteins or amino acid, of their intermediary metabolism, their synthesis in health and disease, and of the influence of the endocrine and nervous systems and various forms of therapy thereon. This is a tremendous undertaking because there is so much that is not known, especially about the endocrine and nervous system aspects, and yet much is implied if one searches the literature sufficiently. The author naturally makes much use of what he calls the "coefficient of protein oxidation" as a means of determining the extent of protein oxidation. The coefficient is applied to urine and is the quotient one obtains by dividing the total urea nitrogen by the sum of urea nitrogen, amino nitrogen and ammonia nitrogen found in urine. Uric acid, purine bases, creatine and creatinine are not referred to, nor are the fundamental studies by Folin on nitrogen distribution on low and high protein diets or the classic studies by Chittenden and Mendel on minimum protein level. He

arrives at the important conclusion that when animals are kept on a minimum protein intake the "coefficient of protein oxidation" varies considerably in different species. However, no attempt is made to correlate this with surface area or weight. On the other hand, when the various species are forced to live on high protein levels this coefficient is uniformly in the range of 90 to 98 per cent. No doubt the usual custom of expressing urea nitrogen in percentage of total nitrogen would have shown these differences even more strikingly. The brief review on the effect of structures of amino acids on their lability and on the value of their optical isomers and derivatives is rather unsatisfactory, partly because relatively little has been done with the methods used by the author and partly because the beautiful studies on the value of optical isomers and various possible intermediates in growth and maintenance are not sufficiently emphasized. From his discussion of the mechanism involved in deamination he concludes that, if the amino group is blocked by the substitution of one or more hydrogens of the amino group by a group which cannot be hydrolyzed by bacteria or enzymes in the digestive tract, the amino acid cannot be of biologic value in mammals. He also concludes that in the deamination of the natural amino acids we may have this as a result of direct hydrolytic or oxidative action or through transamination by α -ketoglutaric acid. After the citation of a great amount of evidence and repetition, he concludes that the main sites of deamination are the liver and kidney. He next considers the internal secretions as possible regulators of protein catabolism. The findings on the basis of blood chemistry are in many cases very contradictory. However, he grants that insulin by an unknown mechanism retards tissue proteolysis without affecting deamination and that the thyroid secretion increases the metabolism, possibly through more or less specific action on arginine. The effects on the protein metabolism by the parathyroid, adrenal (cortical and medullary), gonadal and hypophysial hormones as based on pathologic, extirpation and organotherapeutic studies are very uncertain at the present time. However, the spleen he considers in some way to play a role in controlling the amino acid content of the red corpuscles. The work closes with a brief presentation of the uncertain state of our knowledge as to the role of the nervous system and vitamins in protein catabolism. A rather select bibliography of six hundred and fourteen references is included. There is no doubt that the author has attempted to answer too many questions in too limited a volume and with scant specific data for the involved problems under consideration. These difficulties we now realize all the more with the rapid advances made as a result of the use of isotopes and radioactive elements in studies on metabolism.

Die gynäkologischen Operationen und ihre topographisch-anatomischen Grundlagen. Von Prof. Dr. med. Heinrich Martius, Direktor der Universitäts-Frauenklinik Göttingen. Second edition. Paper. Price, 41.25 marks. Pp 424, with 427 illustrations by Katho Droyen. Leipzig: Georg Thieme, 1941.

In the preface the author states that this textbook is not intended to review gynecologic surgery but rather to present briefly the normal topographic anatomic relations as well as the topographic anatomic relations that have been altered by pathologic processes or by the surgeon. Accepted gynecologic surgical procedures are mentioned but not described in detail. The reader is referred to the articles in which the operative techniques are described more fully.

The text is written simply and is fairly brief. The greatest contribution of the book lies in the wealth of excellent colored anatomic photographs and diagrammatic sketches by which the author describes the altered anatomic relations and outlines plastic procedures without necessitating a lengthy discussion of each operation. Since the text also presents many of the accepted surgical procedures employed by gynecologic surgeons, which are described fully in textbooks on operative surgery, only some of the technical details which this author stresses will be reviewed.

He recommends the use of split rubber tubes for intraperitoneal drainage and iodoform gauze strips for all extraperitoneal drainage. When there has been considerable bleeding in the cul-de-sac after difficult procedures, gauze soaked in tincture of iodine is inserted into Douglas's pouch and withdrawn through the vagina, to be removed at a later date.

The author's procedure for peritonization after subtotal hysterectomy is rather interesting since he uses only three sutures. One on each side catches the vesical peritoneum, the round ligament, the ovarian ligament and the peritoneum behind the cervical stump. The third suture draws the vesical peritoneum over the cervical stump. This method is utilized to prevent ischemia and infection.

The author prefers subtotal abdominal hysterectomy to total abdominal hysterectomy because it gives better support in repair of the peritoneal floor. Franz found operative mortality rates of 3.7 per cent for total and of 1.7 per cent for subtotal hysterectomy. The corresponding rates were 5.6 per cent and 1.3 per cent in von Jaksch's experience and 7.8 per cent and 1.6 per cent in the author's ten year experience. Albrecht in 2,305 cases of total abdominal hysterectomy had a mortality rate of 3.6 per cent and in 4,575 cases of subtotal abdominal hysterectomy a mortality rate of 1.9 per cent. Albrecht in a series of 3,436 cases of subtotal abdominal hysterectomy found that in only 0.32 per cent did carcinoma of the cervix develop. On the basis of these figures the author feels that subtotal hysterectomy is the operation of choice because of the small incidence of carcinoma of the cervical stump and the lower mortality rate in these men's hands. He also states that in 11 per cent of cases simple myomas recur subsequent to myomectomy.

The illustrations of the Wertheim procedure are excellent. In this type of hysterectomy the author removes only those lymph nodes which appear to be involved and recommends that interrupted sutures, rather than continuous sutures, be used in closing the abdominal wall after this particular type of operation. Before performance of Wertheim hysterectomy the vagina is prepared for eight days by irrigating it with 0.5 per cent solution of lactic acid three times a day and 1 per cent tincture of iodine twice a day.

The author feels that in ectopic pregnancy the opposite tube, if healthy, should be retained if the patient is young. In support of this he cites Dietrich's data, which show that in only 4.68 per cent of 4,526 cases was there recurrent tubal pregnancy, whereas in 28.62 per cent of 615 cases there was subsequent normal intrauterine pregnancy.

The author feels that, regardless of symptoms, ovarian tumors should be removed because of the danger of a twisted pedicle. The incidence of twisted pedicles in his series was 10 to 20 per cent in cases of ovarian cyst. Furthermore, he states that 20 per cent of all ovarian tumors are malignant. It is his impression that, in treatment of young patients who have an arrhenoblastoma or granulosa tumor, the opposite ovary should be saved since these conditions run a clinically benign course. In treatment of older patients, however, he recommends total abdominal hysterectomy as well as oophorectomy followed by roentgen therapy.

Vaginal plastic procedures, including many different methods, are beautifully described and illustrated. Also plastic operations on the fallopian tubes and transplantation of the fallopian tubes together with sterilization are well described. The author prefers presacral anesthesia in all vaginal plastic surgical procedures. In treatment of rectovaginal fistulas he frequently reinforces the repaired region by the use of fat surrounding the bulbocavernosus muscle. It is separated from the muscle and inserted underneath the vaginal vault during the closure. Rather extensive and clearcut descriptions are given with regard to repair of vesicovaginal fistulas. The author feels that all suturing should be done with a minimum of tension and he utilizes from three to six catgut sutures in all. The Schuchardt incision is recommended for more adequate exposure of the fistulous opening. Here again the author recommends that the fat from the bulbocavernosus muscle be utilized as a reinforcement between the vaginal mucous membrane and connective tissue and the bladder wall. The postoperative care of these patients is interesting. The author recommends that the bladder be irrigated after the second postoperative day with 50 cc. of 3 per cent solution of boric acid twice a day. This amount is increased gradually up to 200 cc. by the sixth or seventh day. After the seventh day the catheter is clamped gradually and is removed on the ninth day.

The book is written beautifully and every procedure described is illustrated excellently by clearcut anatomic drawings.

Industrial Hygiene and Occupational Diseases: Course Outline and Digest of Lectures. By Edward B. Gramliss. Conducted by the Center for Safety, General Education, New York University, in coop. Conservation Bureau, New York City. Paper. Various pagination. New York, 1941.

This volume represents one approach to the existing requirement for more and better organized instruction in industrial hygiene and occupational disease control. The subject matter contained in the fifteen lectures collected here in mimeographed form is not intended for physicians or industrial hygienists but rather for insurance and supervisory personnel in close personal association with working men and environment. Nevertheless, much of the information could be studied with profit by practicing physicians, and certainly a review of this material, particularly its style of organization, would be helpful to curriculum committees in medical and professional schools. The headings of the lectures include such topics as dust producing materials, metallic poisoning, toxic gases, toxic organic solvents, dermatoses and venereal diseases and then proceed to more general considerations of certain social and economic aspects of occupational diseases and specific methods of control. A reasonably complete industrial hygiene bibliography is included.

Dietetics for the Clinician. By Late Milton Arlenden Bridges, B.S., M.D., F.A.C.P. Fourth edition. Cloth. Price, \$10. Pp. 960. Philadelphia: Lea & Febiger, 1941.

The prompt acceptance and repeated editions of this book made desirable a new edition, which had long been planned by Dr. Milton Arlenden Bridges before his untimely death. Under the leadership of Marjorie R. Mattice, this edition has been completed. Chiefly apparent is the substitution of typical diets for the sample menus previously used. These were prepared by Dorothy M. Stephens, chief dietitian of the New York Post-Graduate Hospital. Naturally the section on vitamins has had extensive revision. Much new tabular data and other information have been added. The vitamins are represented by data as late as the end of October 1940. Many collaborators have revised their material and brought it up to date. The book is well organized and most informative; in fact, one of the most useful textbooks on dietetics now available.

La gastrectomía: Sus resultados, consideraciones clínico-quirúrgicas. Por Enrique P. Viacava. Tesis de doctorado, Universidad nacional de Buenos Aires, Facultad de ciencias médicas, Escuela de medicina, Núm. 5200. Paper. Pp. 76, with 40 illustrations. Buenos Aires: Sebastián de Amorrotu e Hijos, 1940.

This is a thesis for the medical doctorate from the University of Buenos Aires. It is a well written discussion of the advantages and disadvantages of the several types of operation for resection of the stomach. There are many good illustrations showing the roentgenologic appearance of the stomach and jejunum after operation. There are reports of a number of cases of subtotal resection. Dr. Viacava concluded that the Polya and Hoffmeister-Finsterer operations have the least mortality and are the best today for gastric resection.

The British Encyclopaedia of Medical Practice Including Medicine, Surgery, Obstetrics, Gynaecology and Other Special Subjects. Complete Index. Under the General Editorship of Sir Humphry Rolleston, G.C.V.O., K.C.B., M.D. Cloth. Price, \$10. Pp. 486. Toronto & London: Butterworth & Co., Ltd., 1941.

From time to time THE JOURNAL has published reviews of the various volumes of the British Encyclopaedia of Medical Practice. Now comes the complete index, a comprehensive volume covering all of the material available in that system. It is wholly a subject index, including the material not only in the complete set but also in the supplementary volume of Surveys and Abstracts published in 1939. With intelligent use of the index, the cyclopedia becomes a most practical reference work.

Physical Diagnosis. By William Nance Anderson, B.Sc., M.D., Associate Clinical Professor of Medicine at the University of Southern California School of Medicine, Los Angeles, California. Cloth. Price, \$1.75. Pp. 424, with 92 illustrations. Philadelphia: Lea & Febiger, 1940.

This practical small book on physical diagnosis is not greatly different from several others on the market. It is divided into three parts, part I dealing with the fundamental principles of physical diagnosis, part II with physical examination, and part III

with physical diagnosis in disease. The style is lucid and the subject is practically and simply presented. The volume is well illustrated. All padding has been eliminated, and many of the older infrequently used diagnostic tests have been omitted. Chronic adhesive pericarditis is still stressed, although from a practical clinical point of view it is a great rarity. Chronic constrictive pericarditis producing chronic cardiac compression and the syndrome of acute cardiac compression have been omitted. Examination of the nervous system is not included in this work.

Estenosis hipertrófica del píloro en el lactante. Por el Dr. Carlos Ruiz. Tesis de doctorado. Universidad nacional de Buenos Aires, Facultad de ciencias médicas, No. 5373. Paper. Pp. 80. Buenos Aires: El Ateneo, 1940.

This is a thesis for the medical doctorate. It is based on a study of 21 children with congenital stenosis of the pylorus. Dr. Ruiz reviewed the literature on the supposed causes of the condition and came to the conclusion that little is known except that there is a hypertrophy of the muscle of the pylorus and probably spasm. He discusses details of the medical treatment and believes that it can best be carried out in the hospital with the child away from the family. Such treatment should not be persisted in until the child is emaciated. As soon as it appears that good results are not going to be obtained, the Fredet-Rammstedt operation should be performed.

A Textbook of Ophthalmology. By Sanford R. Gifford, M.A., M.D., F.A.C.S., Professor of Ophthalmology, Northwestern University Medical School, Chicago. Second edition. Cloth. Price, \$4. Pp. 470, with 233 illustrations. Philadelphia & London: W. B. Saunders Company, 1941.

In this revised edition Dr. Gifford has given consideration particularly to the use of such newer therapeutic agents as sulfanilamide, heparin, thiamine hydrochloride, riboflavin and other vitamins. The publishers report that the chapter on the sclera has been entirely rewritten and that there is a complete revised discussion of diseases of the cardiovascular renal system. The first edition of this shorter textbook of ophthalmology was most successful, which no doubt prompted the publication of a new edition. Particularly to be commended are the numerous excellent illustrations, many of them in color. For the specialists as well as for the general practitioners these colored plates are an invaluable aid.

Occupational and Related Dermatoses. Abstracts from the Literature for the Years 1935 to 1939, Inclusive. By Louis Schwartz, Medical Director, and Leon H. Warren, Acting Assistant Surgeon. From the Office of Dermatoses Investigations, National Institute of Health. Prepared by direction of the Surgeon General. Federal Security Agency, U. S. Public Health Service. Public Health Bulletin No. 266. Paper. Price, 20 cents. Pp. 160. Washington, D. C.: Supt. of Doc., Government Printing Office, 1941.

This bulletin is a five year report of the Committee on Skin Irritants of the Industrial Hygiene Section of the American Public Health Association and contains abstracts of pertinent references in the medical literature on occupational and related dermatoses. Accumulated abstracts of this kind collected by the committee now cover the period from 1926 to 1939 inclusive.

Medicine Preferred (A Modern Play in Three Acts). By E. Francis McDevitt. Cloth. Price \$1.50. Pp. 84. New York: Fortune's Publishers, Inc., 1940.

This crude, amateurish job of play writing depicts a self-righteous young doctor of subadolescent emotional development who blunders through three acts of mock heroics about dope rings, charity patients and unwarranted attacks on the medical profession.

Pulmonary Diseases in the Mining Industry. By R. R. Sayers, Director, Bureau of Mines. United States Department of the Interior, Bureau of Mines. Information Circular 7146. Paper. Pp. 26. Pittsburgh, 1941.

This paper contains extensive information about the incidence of pulmonary disease in miners, etiologic relationships to inhaled dust, permissible concentrations of dust in mining operations and accepted ways of controlling dust exposure. Attention is called to the fact that, although silicosis has preoccupied lay and professional attention during recent years, bronchitis, influenza, pneumonia and tuberculosis are far greater sources of suffering and economic loss.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

HYPOGLYCEMIA AND ASTHMA

To the Editor:—A married woman aged 46 has been subject to attacks of asthma or bronchospasm since childhood. She has multiple sensitivity, reacting strongly to at least ten different substances, such as animal hair, feathers, horse dander, house dust, ragweed pollen and several foods. She has frequently required epinephrine for the relief of bronchospasm. Recently it was found that she has a consistently low blood sugar. One report showed 66 mg. per hundred cubic centimeters of blood two hours after a meal. The fasting blood sugar level varies from 50 to 60. For a time she took rather large amounts of sweetened fruit juice, candy and the like and succeeded in maintaining the blood sugar level at 90 to 100 mg. per hundred cubic centimeters. When her blood sugar was at this level she had almost no bronchospasm and naturally had much more energy and endurance. The ingestion of enough starches and sweets to maintain the blood sugar at a level which kept her free from bronchospasm resulted in a weight gain of about 14 pounds (6.4 Kg.). On discovering the rapid gain, she reduced her intake of carbohydrates, the blood sugar fell and the bronchospasm returned. Is there any way in which a normal blood sugar level can be maintained aside from the ingestion of large amounts of carbohydrates? The patient does not need to gain more weight, and she objects to a diet which causes a gain. Any information relative to this problem will be appreciated.

M.D., Wisconsin.

ANSWER.—Other than by feeding carbohydrate there is no practical method by which the blood sugar can be raised. Temporarily epinephrine hydrochloride will raise the sugar in the blood, and thyroid given to diabetic patients makes the diabetes more difficult to control. Thyroid could be employed if the metabolism is low.

Asthma is not as infrequent among the diabetic as supposed, now that experience with more patients with a longer duration of the disease has been obtained. Invariably the use of epinephrine with a diabetic patient during treatment of an asthmatic attack complicates and makes more difficult treatment with insulin.

Repeated observations of the blood sugar before and after meals should be made before drawing any conclusions about the prevalence of low values in asthma. Especially should these be repeated during periods when the asthma is active as well as when the asthma is in a latent stage. Several authors, including among others MacQuiddy and his co-workers, Black, Wagner and Rackemann, have shown that the dextrose tolerance tests are about the same among patients with asthma as with normal persons.

Diabetic and asthma patients live for years; consequently any plan of treatment must be conceived in this spirit. Obviously any individual with a low blood sugar is more unstable than with a normal blood sugar, and if a low blood sugar occurred in an asthmatic person it is reasonable to conclude that it would affect the asthma deleteriously. Gain in weight is easily avoided by reduction of the fat in the diet.

IODIZED POPPYSEED OIL FOR DIAGNOSIS IN PRESENCE OF TUBERCULOSIS

To the Editor:—What is the present consensus on the use of iodized poppyseed oil in the lungs for diagnosis in the presence of pulmonary tuberculosis?

Edward G. Jones Jr., M.D., Baltimore.

ANSWER.—Iodized poppyseed oil and other forms of iodized oil are now freely used as aids in diagnosis even for persons who are known to have pulmonary tuberculosis. There is often the question of obstruction in a bronchus or one of its ramifications resulting in atelectasis, and iodized oil is administered with great advantage in determining the location and extent of the obstruction. This facilitates the subsequent work of the bronchoscopist. Again, the question arises as to whether bronchiectasis and abscesses are complicating pulmonary tuberculosis to such a degree as to render collapse therapy of little or no value. The administration of iodized oil usually aids greatly in detecting on roentgen inspection evidence of such complications. After collapse therapy, particularly extrapleural thoracoplasty, there may be persistent cough and expectoration even though tubercle bacilli cannot be recovered from the sputum. The introduction of iodized oil into the bronchial ramifications on the side of the collapsed lung often enables one to visualize evidence of bronchiectasis, particularly in the basal ramifications. This may have been present before or have developed since the

operation was performed; its detection, when the bronchiectasis is nontuberculous, aids the physician greatly in explaining the cause of the persistent cough and expectoration and relieves the patient's mind of the suspicion that the surgeon may have been unsuccessful in treating the tuberculous disease.

At one time it was believed that iodides have a deleterious effect on tuberculous lesions. This idea was encouraged when they were employed extensively as an aid in recovering tubercle bacilli from sputum. Before the finer aids in diagnosis were available, many physicians refrained from labeling a lesion tuberculous until tubercle bacilli could be found in the sputum. Iodides were frequently administered in cases in which bacilli could not be found; they often resulted in more profuse expectoration of sputum from which tubercle bacilli were recovered, and the conclusion was later drawn that iodides had actually broken down the lesions, thus liberating tubercle bacilli. In recent years much doubt has arisen in the minds of physicians as to whether iodides, as they are usually administered, have any deleterious effect on tuberculous lesions. While they increase and liquefy the secretions in the bronchial tubes, so as to facilitate expectoration, it seems probable that they only liberate mucus and other material in the region of the lesion, with no harm to the lesion itself.

When iodized oil is introduced into the bronchial tree of a tuberculous patient, its iodine content is liberated so slowly that one need not fear a concentration sufficiently great to do harm. If oil is introduced by the supraglottic method, some may be swallowed, and when it reaches the intestine the iodine is promptly liberated from the oil, even to the point of producing symptoms of iodism. To prevent this effect, or to reduce it considerably, 1 drachm (4 Gm.) of magnesium sulfate administered immediately after the oil has been introduced is effective.

TESTING FOR SENSITIVITY TO DYES

To the Editor:—We have in our community a dyestuff factory whose officials are much interested in having their employees checked for sensitivity to and tolerance of the components of aniline dyes, especially methyl cyanide. Are there such tests? Would it be possible to procure literature on these subjects?

C. A. S. Williams, M.D., Marietta, Ohio.

ANSWER.—Tests of the character contemplated are chiefly limited to cutaneous irritants. Some finished dyes are cutaneous irritants or sensitizing agents, such as paraphenylenediamine, but a larger number of irritants are likely to be found among intermediates and basic materials. Patch or contact tests for cutaneous irritants are valuable under many circumstances. However, the determination of precise causes of irritation of the skin in dyestuff factories often is difficult, since irritation may result from such extraneous sources as soaps, solvents used in factories for deterging, fungous infection, food allergies and friction.

A patch test is based on the procedure of applying small quantities of any suspected substance to intact (usually) cutaneous surfaces, ordinarily under cover of rubber damming or adhesive plaster for periods of twenty-four to ninety-six hours. Obviously, the material applied must be diluted to a point below that of irritation for all persons. The technic of patch testing may be found in almost all recent textbooks on dermatology and particularly in Schwartz and Tulipan (*Occupational Diseases of the Skin*, Philadelphia, Lea & Febiger, 1939). The patch test, while apparently simple, may involve complex ramifications. For example, some substances are irritants only in the presence of acid sweat; some substances in themselves nonirritating may become irritants in the presence of other concomitantly used substances; some persons may respond actively to patch tests during one period but may be wholly unresponsive at other times; contact with some batches of a dyestuff, through instability or impurities, may lead to positive results while other lots, assumed to be identical, may provoke no irritation. In the textbook referred to, in Prosser White (*The Dermatogoses or Occupational Affections of the Skin*, London, H. K. Lewis & Co., Ltd., 1934) and in Vaughan (*Strange Maladies*, New York, Doubleday, Doran & Co., 1931) are many references to various irritants and sensitizing agents. On occasion positive reactions in contact tests may suggest the cause of other noncutaneous disorders from the same cause. Thus a positive cutaneous reaction to applied amines may suggest the cause of an obscure asthma or allergic edema. Conversely, there are no known practical tests for measuring the tolerance of various persons to such substances used in the manufacture of dye as benzene, toluene and phenol. There do exist fairly well accepted standards representing tolerable limits of many of these substances. Thus benzene should not be tolerated in a workroom atmosphere to an extent greater than 100 parts per million of air for continuous exposure.

TREATMENT OF MISSED ABORTION

To the Editor—A primipara aged 21 first consulted me regarding her pregnancy on Feb. 1, 1941. According to her menstrual history her due date was approximately the first part of May. About January 7 she fell and sprained her ankle; since that time no fetal movements had been perceptible to the patient. On initial examination I found the fundus to be 1 cm. below the navel, no fetal movements or heart tones could be made out. Urinalysis and blood pressure were normal. When first seen, the patient was having some pains in the lower part of the abdomen and a small amount of vaginal bleeding. My impression was that the patient had been carrying a dead fetus and that the case represented a missed abortion. However, the pains and bleeding subsided despite an attempt at a medical induction, and prior to her leaving the hospital a sterile vaginal examination revealed a long tight cervix. Since leaving the hospital the patient has felt fine except for one period of several days when she had a vesperal temperature of 100-101 F. and some lower abdominal cramps. No fetal heart tones or movements have been detected at any time, and the size of the uterus has diminished somewhat these past several weeks. Is expectancy the proper treatment in this case? If active intervention is justified, when and how should it be done?

Jerome M. Spatz, M.D., Cut Bank, Mont.

ANSWER—The most likely diagnosis is a missed abortion. The uterus has failed to increase in size and has actually decreased during the period under observation. The absence of fetal heart tones is likewise significant. It is possible that a roentgenogram of the lower part of the abdomen might reveal a fetal skeleton. Hydatidiform mole must likewise be considered in the differential diagnosis. A Friedmann or an Aschheim-Zondek test should be positive in high dilution in this event.

There is no immediate indication for the evacuation of the uterus in a missed abortion. The gestational sac and its contents produce no undesirable symptoms. In time the patient will go into labor and pass the products of conception. There is an increasing irritability on the part of the uterus and it becomes more and more responsive to solution of posterior pituitary. In the event that it is decided to terminate the pregnancy, small doses of solution of posterior pituitary will usually start the uterus into action. The usual practice is to give 2 or 3 minims (0.15 cc.) at fifteen to twenty minute intervals until uterine activity is established.

Recent experiences indicate that large doses of estrogen will increase the uterine irritability and its responsiveness to solution of posterior pituitary in the patient with a missed abortion. A patient can be given 50 or 100 thousand rat units of estrogens a day over a period of several days and in the event that the gestational products are not expelled this medication can be followed by solution of posterior pituitary. It is rarely necessary to resort to a mechanical dilation of the cervix and instrumental evacuation of the uterine cavity.

UREA-SPLITTING INFECTION OF THE URINARY TRACT

To the Editor—A man aged 39 had his right kidney removed for a stone in the ureter in 1933. At present he suffers frequent burning in the urethra while voiding, general fatigue, lack of energy, loss of appetite and loss of weight. He is slightly underweight, and his blood pressure is 100 systolic and 60 diastolic. This general condition of disability has not improved, notwithstanding tonics and routine treatment. His urine has been constantly alkaline, and I have not succeeded in acidifying it either with the proper protein diet or with a large dose of ammonium chloride. The urine does not contain albumin, sugar, casts, blood or pus. It exhibits, however, a considerable quantity of triple phosphates and numerous staphylococci. The patient was under observation in a New York hospital about three months ago, at which time cystoscopic examination revealed a badly inflamed bladder with whitish elevations over the mucous membrane. Examination of the blood revealed that the level of nonprotein nitrogen and urea was elevated. My particular aim at present is to acidify the patient's urine, since I suspect that he suffers from a urea-splitting bacterial infection which could be better controlled in an acid medium, the same principle applying to the presence of the staphylococci in the urine. How could this be achieved in view of the failure of the ordinary methods I have used? Would it be advisable to administer sulfathiazole, or would this drug be dangerous to the function of the remaining kidney? Has sulfathiazole proved beneficial in the presence of staphylococci in the urinary tract? The main complaints of the patient are a burning sensation when voiding and heaviness of the urine, particularly on the days when the phosphate sediment reaches a high degree of density. Any suggestion would be greatly appreciated.

M. F. Mantia, M.D., Darien, Ga.

ANSWER—A case of this kind presents one of the most difficult problems in the field of urology. When there is a urea-splitting infection present, any of the nonacidifying agents are not usually of benefit. As *Staphylococcus aureus* is the infectious agent, sulfathiazole is the drug of choice and may be administered in a moderate dose of 30 to 45 grains (2 to 3 Gm.) daily without difficulty. A patient should be under constant observation during the time this drug is given. A thorough search for all foci of infection should be made, and the prostate should be thoroughly investigated and treated if an existing infection is found.

WATER FILTERS FOR HOMES

To the Editor.—Can you give me any information about the chemicals used by the Puro Filter Corporation of Illinois to cleanse and disinfect the filters which they install in private dwellings? For a monthly fee they send a man to inspect the filter and rinse it out with some kind of fluid. They describe the fluid as an antiseptic. Any information you can give me about these filters would be appreciated. I am interested in the filtration of water for drinking and cooking purposes for a family of seven people.

M D, Illinois.

ANSWER.—The clogged pores of fused porous filters commonly used for household purposes may be cleaned by using a strong solution of caustic soda or hydrochloric acid followed by a neutralizing solution and thorough rinsing. Such filters are effective in removing suspended matter from water, but they should not be depended on for the purification of water from a contaminated source. As a rule filters which are installed under contract for regular cleaning by a service man are more satisfactory than those sold without this service, because the average home owner is likely to neglect the filter. Such neglect may result in the filter serving as a breeding place for bacteria which may have been filtered out of the water supply. The choice of filters for domestic use must be made based on the character of water to be filtered and the kind of service desired.

There are two main types of household filters: those made of unglazed porcelain, of the Pasteur-Chamberland type, and those made of diatomaceous earth, the Berkefeld type. Sandstone, charcoal, asbestos and a great variety of filtering substances also are used. If there is a question of contamination, boiling should follow the filtering. The sterilizing fluid employed by the Puro Filter Corporation contains free ions of iodine, chlorine and copper. Activated carbon and bone char also are employed in the purifier. The sterilization process is reported to be effective in destroying molds which ordinarily gather in a medium of this sort.

POSSIBLE NARCOLEPSY IN ELDERLY WOMAN

To the Editor—A woman aged 74 whose only previous sickness was painful rheumatism at the age of 21 (in 1888), at which time she could not even stand the weight of the sheets on her body and was anemic, now has spells after waking normally in the morning and proceeding to her regular work but then lapsing into a state of forgetfulness. Her mind begins to wander sometimes, and she says "I must fix father's breakfast." (Her father died twenty-two years ago.) She then goes to bed and falls asleep, and she can hardly be roused. If propped up and presented with food she will feed herself or, if somnolent, will accept food if it is fed to her. Her eyes may be open, but there is a vacant stare, and she does not recognize any one, falls asleep again and awakens several hours later not having any knowledge or recollection of what has occurred. She is then perfectly well otherwise. She has had these spells on Dec. 13, 1939 and in 1940 on January 10 and 21, March 11, April 9, May 11, June 4, July 14 and 21, September 2, October 3 and December 2. Her blood pressure is normal for her age (systolic 160). Her urine is normal, but she is anemic. I have given her a saline laxative every Saturday, and when it works well she has no spells for some time. I am giving her tablets of amphetamine sulfate during her spells. She has taken hematonic tablets with liver concentrate for her anemia. Thank you for whatever help you may give.

E. H. Sauvignat, M.D., Laredo, Texas.

ANSWER—The case appears to fall into the vague field of the narcolepsies or the borderland of epilepsy. Cataplexy, often associated with narcolepsy, is absent; the patient, moreover, is older than most sufferers from this unusual syndrome. The rheumatic attack, occurring fifty years before, would not appear to be relevant to the present illness. Antecedent encephalitis is more likely as a cause of the narcolepsy. Amphetamine sulfate should be used with some caution in a patient of 74 years. Ephedrine hydrochloride or sulfate may be given over a longer period with relative safety, in doses of 0.025 Gm. ($\frac{3}{8}$ grain), two or three times a day.

MUCOUS DISCHARGE FROM VAGINA—PAIN OF CREST OF THE ILIUM

To the Editor—1. I would appreciate information as to the origin and treatment of a profuse uterine discharge resembling mucus in appearance and manifest especially after the menses or following coitus. The discharge can be observed issuing from the cervix and is a profuse that patients are required to wear a napkin. 2. Some patients with gynecologic complaints give a history of severe pain and tenderness along the crest of the ilium. On examination adnexal disease is found. Will you kindly explain whether or not this is a known condition and how the atypical location of symptoms can be explained?

M D, New York.

ANSWER—1. Profuse mucous discharge almost certainly arises in the cervix and not in the uterine cavity. Some women regularly have such a discharge of mucus for two or three days during the midmenstrual interval. In others a mucous plug may be seen in the cervical canal through a speculum

at this time in the menstrual cycle. Such a mucous discharge is supposed to indicate that ovulation is about to take place or has recently occurred. It may be stimulated or loosened from the cervical canal by coitus in some instances. There is generally no satisfactory treatment if the mucous discharge is associated with ovulation except to suppress ovulation. However, in some cases in which the discharge is linked with ovulation and in most other cases in which it is not associated with ovulation, cauterization of the cervical canal will bring relief. The cauterization must not extend too near the internal os or too deeply into the cervical tissue; otherwise a stricture may result.

2. Pain and tenderness along the crest of the ilium associated with adnexal disease is an uncommon occurrence. There is no satisfactory explanation for this association except in the few cases in which large adnexal masses are densely adherent to the iliac fossas. In these cases the pain and tenderness are due to direct involvement of the periosteum in this region.

TINCTURE OF BELLADONNA AND SINUSITIS

To the Editor:—A patient with frontal sinus headache instilled in her nose about 2 droppers of tincture of belladonna. After a sensation of burning lasting for about fifteen minutes her headache passed away and did not return until three weeks later, when she contracted another cold. A neighbor also suffering from sinus headaches asked her for some headache remedy she might have. The patient offered her the same drops, which she thought were the drops prescribed for her sinus condition (isotonic solution of ephedrine sulfate 1 per cent). She instilled about 2 droppers of tincture of belladonna in her friend's nose. Severe burning and slight dilatation of the pupils were followed by disappearance of the headache and long lasting relief. How would you explain this effect of the tincture? Is there any danger to the nasal mucosa from repeated use of this tincture?

M.D., Maryland.

ANSWER.—It is strange that a single application of this drug could so dramatically affect the course of sinusitis, which normally lasts days or weeks. One must consider that in the 2 cases described it was just a coincidence; to do differently would give the medication credit which it probably does not deserve.

The dangers of using tincture of belladonna in the nose are those of atropine taken internally or absorbed locally from any mucous membranes. Atropine is a powerful drug, with a number of well known unpleasant and sometimes unsafe reactions. Instilled into the nose the drug would be absorbed by way of the mucous membrane of the nose, and some of it would be absorbed from the gastric mucosa from swallowing the medication. Its use in the nose would be, to say the least, unusual. It would be necessary to repeat this clinical experiment enough times under proper control and with caution before one could arrive at conclusions definite enough to answer the query accurately.

NEUROFIBROMATOSIS AND "COFFEE SPOTS"

To the Editor:—What is the likelihood of a patient with "coffee spots" developing the typical tumors of von Recklinghausen's disease? Would the possibility of such tumors be increased by pregnancy? Would the presence or absence of mental deficiency or a family history of neurofibromatosis alter the prognosis?

M.D., Pennsylvania.

ANSWER.—"Coffee spots" occur as oval yellowish brown macules of varying size, usually present on the trunk. This type of pigmentation without tumor formation is of frequent occurrence and is a definite phase of the disease. The brown macules when occurring alone constitute the "forme fruste" of the disease. Mental symptoms in the form of various degrees of imbecility and epilepsy occasionally occur as a part of the syndrome. The condition is frequently hereditary, and persons showing the slightest evidence of the eruption should be informed of the familial nature of the malady and advised against having children (Jones, Randolph, Jr., and Hart, Deryl: Multiple Neurofibromatosis [von Recklinghausen's Disease], *Ann. Surg.* 110:916 [Nov.] 1939). Other pertinent references are Becker, S. W., and Obermayer, M. E.: *Modern Dermatology and Syphilology* (Philadelphia, Montreal and London, J. B. Lippincott Company, 1940) and Levin, O. L., and Behrmann, H. T.: *Recklinghausen's Disease* (*Arch. Dermat. & Syph.* 41:480 [March] 1940). The tumors commonly enlarge and the macules become darker during pregnancy. The prognosis in this disease is usually good as regards life, although the tumors may degenerate into neurogenic sarcoma. The prognosis of the mental deficiency in these cases is not good. A family history of neurofibromatosis would increase the likelihood of the occurrence of the disease.

MALE SEX HORMONE FOR ENGORGEMENT OF BREAST

To the Editor:—Does the use of male sex hormone for the relief of engorgement of the breast and pain, due possibly to approaching menopause, carry with it any danger of malignant growths as an aftermath?

Walter C. Hurwitz, M.D., New York.

ANSWER.—The use of male sex hormone for the relief of mammary engorgement and pain is generally successful regardless of whether the patient is near menopause or not. Danger of malignant growths is not recognized, but if large doses are used over a long period of time there is definite likelihood of signs of virilism, such as growth of hair on the face, lowered pitch of the voice and slight enlargement of the clitoris. Likewise, if a large amount of male sex hormone is used the patient may have an acneiform eruption and she may gain weight. However, all these abnormal manifestations disappear after the use of the hormone is discontinued.

HYSTERECTOMY NOT INDICATED FOR MIGRAINE

To the Editor:—A woman aged 44, with typical migraine for the past thirty-four years, with attacks not synchronous with the menses, has in the past year noted a change to attacks of severe bleeding synchronous with the menses. Removal of the uterus has been offered as a possible relief from the migraine. An opinion would be appreciated.

Leon Poris, M.D., Bronx, N. Y.

ANSWER.—There is no general indication for operative removal of the uterus or the ovaries as a relief for migraine. In case of severe bleeding a thorough examination may reveal a pathologic condition which in itself necessitates operation. If not, endocrine therapy may be tried and sterilization by any means avoided. It is possible that the patient is approaching the menopause and does not need to be vigorously treated.

TEETH NOT DISCOLORED BY ACETYLPHENYLHYDRAZINE

To the Editor:—Several months ago I noticed in *Queries and Minor Notes* that acetylphenylhydrazine was recommended for controlling the excessive blood count in polycythemia vera, and, since I had a patient under my care, I immediately placed her on this medication, which has controlled the red blood count remarkably well. She, however, complains that two of her lower front teeth have become discolored with a brownish stain since she began taking the medicine and she believes that it was caused by the medicine. Could you give me any information as to whether this drug would be likely to have any effect on the teeth in this manner or not?

A. E. Coyne, M.D., Washington, D. C.

ANSWER.—Acetylphenylhydrazine does not affect the teeth when given in capsule form. The discoloration complained of must be due to some other cause.

HYPERSENSITIVITY TO SPERMATOZOA

To the Editor:—From a medicolegal standpoint, I should like to learn whether or not there has been any experimental work done to substantiate the possibility of a woman becoming hypersensitive to the sperm of her sex partner. I would appreciate references.

Robert J. Striegel, M.D., Buffalo.

ANSWER.—There is no experimental evidence to indicate that a woman can become hypersensitive to the sperm of her sex partner, assuming that this term is used in an allergic sense. The so-called hostility of the normal endocervical secretions to spermatozoa has likewise found little support in recent careful studies.

EFFECT OF PAINT ON PREGNANT WOMEN

To the Editor:—I would appreciate any information concerning the ill effect on pregnant women from being in close contact with fresh paint.

M.D., Missouri.

ANSWER.—There should be no ill effects from being in close contact with freshly painted surfaces. There would, of course, be no lead hazard inasmuch as there would be no dust or fumes. A highly susceptible person might be annoyed by the smell of turpentine or thinner used in the paint, but it would be most unusual if this produced any real deleterious effect, even in pregnant women.

ISOLATION OF PATIENTS WITH ERYSIPELAS

To the Editor:—What should the regulations be with regard to erysipelas patients treated in hospitals? Should they be isolated on the medical or the pediatric floors, or transferred to the isolation pavilion?

Walter J. Farrell, M.D., Johnson City, N. Y.

ANSWER.—It is not customary to isolate patients with erysipelas in separate isolation pavilions, but it is desirable to do so. It is undesirable and objectionable to have them near other surgical cases; and in medical or pediatric wards they should be isolated in separate rooms.

The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 117, No. 13

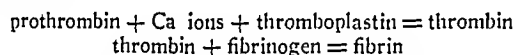
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CHICAGO, ILLINOIS

SEPTEMBER 27, 1941

RECENT ADVANCES IN THE PROBLEM OF BLOOD COAGULATION APPLI- CABLE TO MEDICINE

WILLIAM H. HOWELL, M.D.
BALTIMORE

For a generation or more it has been accepted by most of the workers in this field that clotting of blood takes place in two steps: first, the formation of thrombin from prothrombin and, second, a reaction between thrombin and fibrinogen which leads to the deposition of fibrin needles and the gelatination of the blood. The factors entering into these reactions are expressed in the schema first used by Morawitz, as follows:



The schema is incomplete in that it fails to give the nature of the reactions in the two equations. On this point at present there is great diversity of opinion. It would be interesting to discuss the different views that have been proposed, but it would scarcely be profitable, since the weight of evidence at present does not incline to one view more than to another. Such a discussion, moreover, does not seem to be appropriate to the general purpose of this symposium. The schema is lacking also in another respect, namely that it fails to take into account the role played by the inhibitory substances of the blood and tissues as possible factors in the coagulation process. They do enter in an important way into the clinical applications that are being made of blood physiology, and I shall refer to them in some detail later on.

In the limited space allotted to this paper it is not possible to treat the subject exhaustively. I shall attempt only a brief presentation of the advance in our knowledge concerning three of the factors of coagulation and the bearing of this new work on clinical problems. Probably the most significant contribution to the subject of blood coagulation that has been made in recent years, certainly the one that has found most useful application in clinical medicine, is the discovery by Dam of the existence of a vitamin, vitamin K, which is essential to the formation of prothrombin. His first paper appeared in 1929, and subsequent work by himself and others has confirmed and supplemented his main conclusions. This discovery coincided with important work in this country by Quick, H. P. Smith and

his co-workers and others on the effect of jaundice and injuries to the liver on the concentration of prothrombin in the blood. The relations thus suggested aroused general interest, and in a remarkably short time, through the cooperation of many laboratories, a new chapter in blood physiology was written concerning prothrombin under normal and pathologic conditions.

It is not necessary to give the chronologic development of this new knowledge. It will suffice to recall briefly some of the facts that have been established and that are indeed generally known to the medical profession, since they have been widely published in medical literature. The chemical nature of the vitamin has been determined and its synthesis in the laboratory has been accomplished. In this brilliant work the contributions of American investigators have been of major importance. The natural vitamin, vitamin K, is believed to be a methyl phytyl naphthoquinone, and a number of related compounds have been synthesized which show to varying degrees a similar activity in promoting prothrombin formation. Among these are some water soluble products which on account of ease of administration may prove to be of special therapeutic value. It has been shown that the presence of bile is necessary for the adequate absorption of the vitamin from the intestine and that its activity after absorption is exerted in the liver. Some older work (Drinker) indicates that prothrombin may be produced also in the bone marrow, but the evidence at present strongly favors the view that this function is performed mainly, if not entirely, by the liver. Structural injury to this organ produced by mechanical or chemical agents or as the result of pathologic processes is followed by a reduction in the output of prothrombin. Simple clinical methods have been devised to determine the relative concentration of prothrombin in the blood. The use of these tests and of more elaborate laboratory procedures have shown that certain well known hemorrhagic conditions are due to a fall in concentration of this factor. A reduction to 10 to 20 per cent of the normal is likely to be followed by hemorrhagic symptoms. Such a reduction may occur under conditions which affect the supply, the absorption or the utilization of the vitamin. In obstructive jaundice and biliary fistulas there is interference with absorption, owing to lack of bile in the intestine, and it seems probable that other diseases which affect intestinal functions, such as ulcerative colitis or sprue, may have a similar action. In cases of this kind in which liver function is normal administration of vitamin K suffices to restore prothrombin to the blood and arrest bleeding.

So far as I am aware no cases of prothrombinopenia in the adult have been reported as due to deficiency of

the vitamin in the diet. The explanation given is that an intrinsic source of vitamin is furnished by the bacterial flora of the intestine which is sufficient to give an adequate supply when the diet itself is deficient or lacking in vitamin. In the newborn infant, however, it has been shown that within the first twenty-four hours after birth there is a fall in the prothrombin level of the blood, which is accepted now as the underlying cause of the hemorrhagic disease of the newborn. At birth the supply of prothrombin received from the mother's blood is adequate, but after some hours, owing to the normal consumption of prothrombin in the body, it drops to a critical level, owing presumably to a failure in supply of new vitamin in the diet, although there is the other possibility that there may be deficient absorption due to inadequate secretion of bile acids at this stage. Within a few days the prothrombin, under normal conditions, rises spontaneously to or toward a normal concentration, owing probably, as Quick suggests, to the prompt establishment of a bacterial flora in the intestine. If the return to normal is delayed, hemorrhagic conditions may develop, but these are readily obviated by administration of vitamin K. It is interesting to note that recent reports indicate that administration of vitamin to the mother before delivery prevents the postnatal drop in prothrombin in the infant's blood and thus wards off the danger of hemorrhage.

When the supply of vitamin is adequate and absorption is normal, prothrombin deficiency may occur if its proper utilization is retarded or prevented by serious damage to the structure of the liver. Under such conditions even massive doses of vitamin may be without effect on the prothrombin level of the blood. This fact has been demonstrated experimentally on animals and has been confirmed by observations on patients in whom there was extensive injury to the liver, owing to such conditions as thrombosis or cirrhosis. Out of this fact there may arise a new diagnostic method for the determination of liver function (Andrus). For, if a patient with lowered prothrombin fails to respond satisfactorily to administration of vitamin K, one may conclude that there is probably some organic disease of the liver.

The new information regarding prothrombin has had on the practical side unexpected and most gratifying clinical applications which must be reckoned among the really important advances in medicine. On the physiologic side there remain still many interesting problems to solve. The existence of prothrombin and its role in coagulation have been known since the time of Alexander Schmidt. He used the term some fifty years ago to designate the inactive antecedent substance which gives rise to active thrombin. Writers agree generally that it is a protein body, and several methods have been devised to obtain it in concentrated or purified form. It has, however, never been isolated in such a state of chemical purity as to make possible a wholly satisfactory determination of its structure. Analyses of a purified product recently reported (Seegers) indicate that it is a protein compound containing sulfur and a carbohydrate residue. Quantitatively it is present in blood in small amounts. According to one approximate estimate (Smith), it exists in human blood in a concentration of about 0.03 per cent, or 35 mg. per hundred cubic centimeters. Evidence accumulates to show that prothrombin is supplied to the blood from the liver.

Total hepatectomy in the dog is followed by a rapid fall in the concentration of prothrombin in the blood. One must infer therefore that under normal conditions there is a continuous supply of prothrombin and an equally steady consumption somewhere in the body, since the average amount in the blood remains practically constant. According to a recent report (Andrus, Lord and Kauer), this consumption or disappearance of prothrombin takes place chiefly in the lungs. The authors connect this fact with the platelet formation in the lungs and assume that the new platelets, by liberating their thromboplastin in the lungs, cause the conversion of prothrombin to thrombin. This assumption seems to me to be unjustified, since such evidence as there is indicates that the platelets undergo disintegration in the capillaries of the body in general, particularly the systemic capillaries, and not especially in the lungs. The fact, however, that prothrombin and fibrinogen are being constantly consumed in the body does bring up the interesting question of what function is served thereby. One can hardly believe that this material is simply excreted. The natural assumption is that the prothrombin and fibrinogen react to form fibrin and that the fibrin subserves some special function; possibly, as Nolf suggested long ago, it undergoes proteolysis and furnishes nutrition to the cells, or possibly it protects the integrity of the capillary walls. On this point there is no actual information. It is a problem for the future.

Another important clinical application of coagulation studies is found in the attempts to use heparin to control thrombosis and embolism under pathologic conditions and after surgical operations. Several groups of workers have been engaged in these investigations, especially Best, Murray and their collaborators at Toronto and Jorpes and his colleagues at Stockholm. In the work of the Toronto group careful preliminary experiments were made on animals. They have shown that intravascular injections of heparin serve to prevent thrombus formation after mechanical or chemical injury to the lining of the blood vessels or heart and that arterial anastomoses, embolectomies and transplantations of organs may be performed after heparinization with less danger of thrombosis than in similar operations without heparin.

The application of these experimental results to clinical cases is in progress and the reports received so far are promising, although it is recognized that a larger experience with this mode of treatment is desirable. Murray reports 12 successful arterial embolectomies in which the patients were kept heparinized for from three to fourteen days after the operation; 50 cases of thrombophlebitis in which the treatment was followed by disappearance of pain, reduction in edema and relatively rapid recovery, with no return of symptoms after two years; 22 cases of massive pulmonary embolisms in which there was definite improvement and disappearance of symptoms; 4 successful cases of resection of a portion of the intestine after mesenteric thrombosis; 8 splenectomies in which there was absence of portal thrombosis, and 1 successful venous graft in a case of popliteal aneurysm. The most impressive results reported concern the effect of heparin in preventing postoperative thrombosis and embolism. The seriousness of this complication is generally recognized, and it occurs more frequently, perhaps, than has been assumed. Murray states that in the Toronto General

Hospital 10 per cent of postoperative deaths were due to pulmonary embolism and that an additional 10 per cent had symptoms referable to pulmonary embolism, which constituted probably a factor in the fatal termination. In this hospital heparin has been given after operation, by the method of continuous injection, in some 400 cases. In none of them was there any evidence of thrombosis or pulmonary embolism, although the cases selected for treatment included chiefly those involving operations in which experience has shown that thrombosis occurs with some frequency.

Similar results are reported by Crafoord and Jorpes from the Sabbatsberg's Hospital at Stockholm. In their work a control was established by collecting records of some 1,100 operations of the kind in which postoperative thrombosis is most often encountered. In 9 per cent of this group there was undoubted thrombosis, and in an additional 6 per cent thrombosis was probable as judged from symptoms. In 325 similar cases heparin was given after operation. Two hundred and fifty mg. a day was injected intravenously in four divided doses, beginning four hours after operation and continuing for from five to seven days. In this group there was no clear indication of thrombo-embolic symptoms.

Further data in regard to the results obtained by the Swedish workers are given in a recent number of the *Acta Medica Scandinavica* containing papers presented at a symposium on "Heparin and Thrombosis" held in Stockholm in December 1940. On the basis of his wide experience in the postoperative administration of heparin Crafoord states his belief that "it is definitely established that heparin is of the utmost value as a prophylactic against thrombosis after operations." In regard to its therapeutic effect in cases in which thrombosis has already developed, he feels that the evidence at hand is inconclusive. Other contributors to the symposium, however, expressed the opinion that heparin has a positive therapeutic value in clearing up the symptoms of thrombosis and in preventing spread and recurrence. An interesting contribution to this phase of the subject was made by Bauer. He has developed a method of making venographs of the veins of the leg which enable him to detect the early stages of thrombus formation before clinical symptoms are apparent. For this purpose he injects diodrast into a small branch of the saphenous vein and shortly afterward takes roentgenograms. The presence of a thrombus is revealed by filling defects in the veins roentgenographed. In 21 cases in which a thrombus was shown to be present, and in which heparin was administered, all symptoms disappeared within two to four days. In 32 similar cases in which heparin was not given results were much less favorable. Two patients died, 3 showed pulmonary embolism and 8 pulmonary infarct, and in 24 the thrombus grew until the entire femoral vein was involved.

In a recent report from the Mayo Clinic (Priestley, Essex and Barker) results are given for 55 cases in which heparin was used after definite symptoms of postoperative thrombophlebitis or pulmonary embolism had developed. Heparin was continued for ten days or more, and the authors report favorable results in that there was amelioration of symptoms and no recurrence of thrombosis. In cases of thrombosis of the central vein of the retina with its bad prognosis of ultimate blindness Ploman has used heparin with what he considers to be excellent results. From many sources, therefore, reports are being made which indicate that

heparin may find a useful application in medicine after further experience has developed the conditions under which it can be used most effectively.

On the physiologic side work is still in progress to determine the origin, chemical structure and mode of action of heparin. The observations of Holmgren and Wilander give strong support to the view that heparin is produced in the basophilic mast cells which are found mainly in connective tissue, in the walls of the blood vessels and surrounding the blood capillaries. The granules in the mast cells give a distinctive staining reaction with toluidine blue identical with that shown by heparin, and chemically it has been found that the concentration of heparin in the various tissues runs parallel with the number of mast cells shown to be present. The work of Jorpes indicates that heparin is a mucoitin polysulfuric acid consisting of equimolecular parts of glycuronic acid and acetylated glucosamine, combined in ester form with sulfuric acid. Charles and Scott have succeeded in preparing a crystalline barium salt, and making use of their method Jaques has shown that the heparins from different mammals, in spite of similarity in chemical composition and crystalline form, have widely different potencies, that from the dog having ten times the anticoagulant action of heparin from sheep.

In our original paper Holt and I explained the anticoagulant action of heparin on the theory that it combines with prothrombin to prevent its activation to thrombin. We designated it, therefore, as an anti-prothrombin in contrast with the antithrombin which is known to be present in blood plasma. We emphasized the fact, however, that when heparin is added to plasma or serum there is formed immediately a large amount of new antithrombin proportional to the quantity of heparin added. In other words, heparin reacts with some constituent of the blood to form an antithrombin. Subsequent workers have shown, apparently, that this reaction explains the anticoagulant effect of heparin. That is to say, purified preparations of prothrombin or thrombin are not directly inhibited or antagonized by heparin, but when this substance is added to blood it combines or reacts with some substance in the plasma to form an inhibitory compound which has the known properties of antithrombin. It can neutralize thrombin, if present, or can prevent the conversion of prothrombin to thrombin. Quick has identified the component of the plasma on which the heparin acts as a fraction of the serum albumin complex, the so-called heparin complement. On the basis of these results one might assume, theoretically, that the antithrombin present normally in blood plasma is in reality a heparin albumin compound whose presence is insured by the constant secretion of small quantities of heparin into the blood. It is known quite definitely that in peptone shock or anaphylactic shock there is a secretion of heparin into the blood in amounts sufficient to decrease its coagulability or to render it wholly incoagulable.

This inhibitory factor is not usually taken into account in theories of coagulation. Some of the older writers, Nolf, Bordet and others, make reference to it but do not include it in their schemata of the coagulation reactions. It is an important feature of my theory, and it would appear that recent work tends to support the view that this inhibitory substance, heparin or the heparin-albumin complex, is concerned in maintaining normal fluidity of the circulating blood.

Clinical control of the hemorrhagic condition due to hemophilia has made less progress. It has been shown that in hemophilia there is no lack of prothrombin; therefore in such cases administration of vitamin K is without effect. Recent work, in fact, indicates that all the factors of coagulation are present in normal concentration in hemophilic blood with the exception of thromboplastin. The older workers were aware that addition of a little normal blood or blood plasma or tissue extract to hemophilic blood restores its coagulation time to normal limits. Hence the efficacy of blood transfusions in the control of hemophilic bleeding. The substance in blood that exerts this action has been separated out by acid precipitation by Patek and his co-workers and by Bendien and Van Creveld, and they have shown that it is present also in hemophilic blood, but in smaller amounts. This is one difference between normal and hemophilic blood that has been definitely established. It is a thromboplastic substance, or, for short, a thromboplastin which in all probability is similar to or identical with the thromboplastin of the tissues.

The smaller amount of thromboplastin in hemophilic blood may be explained on theoretic grounds as due to the abnormal stability of the hemophilic blood platelets, since there is good reason for believing that the thromboplastin in normal blood is derived from the disintegration of blood platelets which is constantly taking place in the circulation, and the more rigid platelets of hemophilic blood with their slower disintegration might well be responsible for the lower concentration of thromboplastin in this blood. Certainly any increase in the thromboplastin of hemophilic blood *in vitro* serves to shorten its coagulation time. From this point of view, the fundamental trouble with the hemophilic is this abnormal stability of the blood platelets, as was first suggested, I believe, by Minot and Lee, and it may be noted that this defect not only entails a slower coagulation time but probably tends to prolong bleeding from wounded vessels, owing to defective thrombus formation. Since the blood platelets originate in the cytoplasm of the megakaryocytes and are thrown off from them into the circulation, one might be justified in defining hemophilia as essentially a congenital dysfunction of the megakaryocytes. A view of this kind gives a possible basis for an explanation of the obscure relation between hemophilia and purpura, in some cases an alternating relation, which has been referred to by several authors.

Since tissue extracts added to normal or hemophilic blood *in vitro* hasten its coagulation, it is to be expected that attempts would be made to control hemophilic bleeding and hemorrhage from other causes by intravenous injection of such extracts. Numerous experiments of this kind have been made, but the results on the whole have not been successful, partly perhaps because in some cases the hemorrhagic condition treated was not due to deficiency in thromboplastin and partly because of the danger of intravascular clotting or serious protein reactions. In most cases relatively crude extracts have been used which contained other substances in addition to thromboplastin itself. It remains possible that if the thromboplastin were isolated in pure form it could be used intravascularly in graded dosage in hemophilia to restore the normal thromboplastin level of the blood. The preparation of pure thromboplastin,

which is the active substance in tissue extracts, has not yet been accomplished nor is it known for certain what its chemical structure is. Usually it is assumed to be a protein-phospholipid complex, but this view, although probable, has not been definitely established. Cohen and Chargaff have published recently a method of isolating what they designate as the thromboplastic protein of lung tissue. It is a protein compound linked with phospholipids and containing also some nucleic acid, but from the method used in its preparation one may feel uncertain whether this final product is a definite chemical compound.

For some years past I have been engaged in a similar effort to isolate active thromboplastin from lung tissue. I have been successful in obtaining from human lung a purified active product in a form which appears to be suitable for intravascular injection, but I am not sure at present that this product is free from contamination with inactive protein and lipoid constituents. *In vitro* this preparation causes hemophilic blood to clot in a few minutes or a few seconds, according to the concentration used, but what its action will be on hemophilic blood *in vivo* can be determined only by actual trial. Preliminary experiments on animals have given results of a somewhat unexpected character. It has long been known that crude tissue extracts injected intravenously into animals may cause sudden death from massive intravascular clots. On the other hand, under some conditions a negative phase is manifested and the coagulation time of the blood is prolonged. Using my purified product and injecting it slowly in dogs or cats, I have obtained usually this negative phase and if the amount injected was increased gradually the blood finally became incoagulable. Examination of the blood at this stage showed that it contained no fibrinogen. The effect of the injections had been to defibrinate, or more properly to defibrinogenate, the animal's blood. Efforts to produce a positive phase, that is to shorten the normal time of coagulation, were not definitely successful. With very small doses one may obtain an indication of such an effect, but results of this kind are inconstant and not free from observational errors. On the other hand, an increasing delay in coagulation time is readily obtained, and in the light of the final result this effect may be explained as due to a diminution in the fibrinogen content of the blood.

These results would seem to me to indicate that in the normal animal thromboplastin in the circulating blood is not far from the concentration adequate to cause clotting. A small additional amount initiates, or perhaps simply accelerates, the conversion of fibrinogen to fibrin and thus lowers the amount of fibrinogen in the blood and prolongs coagulation time. In hemophilic blood, however, conditions are different in that there is a deficit in thromboplastin to start with. If our premise is correct, namely that this deficit constitutes the immediate cause of the delay in clotting, then intravenous injection of thromboplastin in proper amounts should restore normal coagulation time for a certain period. Patek and Taylor and Pohle and Taylor report results of this kind from intravenous or intramuscular injections of their "globulin substance" prepared from blood. One may expect, therefore, that when thromboplastin of the tissues is at last isolated successfully, in usable form, it will find a clinical application in the control of hemophilic bleeding.

MANAGEMENT OF SCARLET FEVER
CONTACTSPAUL S. RHOADS, M.D.
WINSTON H. TUCKER, M.D.
AND
BENJAMIN RAPPAPORT, M.D.
EVANSTON, ILL.

In Illinois, cultures for hemolytic streptococci are not required by the quarantine regulations for scarlet fever. Patients are released from quarantine at the end of twenty-eight days unless they have draining purulent lesions, such as sinusitis, suppurating cervical adenitis or otitis media. They must remain away from schools and public gatherings for one week after quarantine is lifted. After the patient with scarlet fever is taken to a contagious disease hospital, nonimmune children in the same home are quarantined for seven days. Then, if no disease has developed, they are allowed to return to school. Adults and immune children are allowed to leave the quarantined home after a soap and water bath and a change to clean clothing, provided they make arrangements not to return. Nonimmune food handlers may resume their occupations but must be kept under daily observation. If the patient with scarlet fever remains in the home, his immediate attendant—usually the mother—and nonimmune children must remain on the premises until he is released from quarantine. (Thus the quarantine provision practically assures prolonged exposure of the susceptible brothers and sisters.)

EFFECTIVENESS OF PRESENT REGULATIONS

The following figures from our own experience indicate that the present regulations are not effective in protecting other persons in the patient's household from contracting scarlet fever. Other data could be presented showing that contacts in school are likewise not protected by these regulations, but the present report will be confined to family contact cases (table 1). Between Dec. 1, 1938 and Feb. 10, 1940, 893 persons with scarlet fever were admitted to the contagious disease department of the Cook County Hospital.

Of these 190 (21.3 per cent) had another member of the household, usually a brother or sister, in the same hospital with scarlet fever during the period of quarantine or soon after it (table 1). A survey of scarlet fever in the city of Evanston during the five year period 1935 to 1940 revealed that of 625 cases 26.6 per cent (166) were in families in which more than one member contracted scarlet fever. The combined figures for the Cook County Hospital and the city of Evanston showed that in only 26 of the 356 "multiple" cases (7.3 per cent) did the patient come down with scarlet fever on the same day as another member of the family.

Table 2 shows that the interval between the onset of illness in the contact and in the original patient varies greatly, the onset in only 63 per cent of all cases having occurred within seven days of the first exposure. The Illinois regulations regarding contacts are apparently based on the idea that the incubation period never goes beyond one week. While this may be true, among the patients in the Cook County Hospital series—all of whom were hospitalized—the contact frequently showed

evidence of illness later than seven days after the original patient had been removed from the home. This means either that the incubation period was sometimes longer than seven days or that among the contacts there were healthy carriers who infected the susceptible persons.

Another important finding was that in 17 of the 81 families having "multiple" cases in the Cook County series and in 9 of the 70 in the Evanston series the first contact became ill after the twenty-eight day period of quarantine. That is, no scarlet fever occurred in the home after the first patient was hospitalized until he was released from quarantine and returned as a convalescent carrier of scarlatinal streptococci, to reexpose the other members of his family. In the contagious disease department of the Evanston Hospital, all patients with scarlet fever have cultures of material from the nose and throat made on blood agar before they are released from quarantine. The records of 100 consecutive patients were studied. Sixty-three were found to have had cultures showing hemolytic streptococci twenty-eight days after the onset of illness and in the absence of complicating lesions, such as draining ears or sinuses or suppurating glands. Hence 63 per cent, after complying with the state quarantine regulations, were still capable of spreading scarlet fever

TABLE 1.—Incidence of Multiple Cases of Scarlet Fever in Families*

	Cases of Scarlet Fever	Total "Multiple" Cases	Total Families Having Con- tact Cases	Average Number of Cases per Family
Cook County Hospital (14 months).....	893	190	81	
City of Evanston (5 years)	625	146	70	
	1,518	336	151	2.34
Percentage of "multiple" cases, 22.1				

* "Multiple" cases are here regarded as those occurring in association with an attack in another member of the household or shortly thereafter.

when released. The problem of scarlet fever in secondary cases developing from exposure to convalescent carriers became so urgent that the Evanston Hospital adopted the policy of retaining service patients in the hospital free of charge until they became free of hemolytic streptococci rather than allowing them to go home to infect others, who would soon be new patients to be cared for at the hospital.

It may be seen from the foregoing data that the present Illinois regulations,¹ in which cultures for hemolytic streptococci play no part and no steps are taken to protect susceptible contacts beyond isolation of the patient, are inadequate to prevent the spread of scarlet fever.

MODERN METHODS FOR THE CONTROL OF
SCARLET FEVER

The Dicks² for several years have recommended the following procedures when scarlet fever breaks out in a home or an institution.

1. Isolate the patient.
2. Do Dick tests on all contacts, including adults.
3. Make cultures of material from the nose and throat of all contacts, using blood agar plates.
4. Take the temperature and inspect the throat and the upper part of the trunk of all contacts.

From the Department of Medicine, Northwestern University Medical School.
Read before the Section on Practice of Medicine at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 5, 1941.

1. Educational Health Circular 13 of the Illinois Department of Public Health.
2. Dick, George F., and Dick, Gladys H.: *Scarlet Fever*, Chicago, Year Book Publishers, Inc., 1938.

In cases in which the inspection and the temperature reading lead one to suspect the imminence of scarlet fever, passive immunization may be produced at once by the injection of a prophylactic dose (a minimum of 150,000 original neutralizing units) of scarlet fever antitoxin or an adequate dose of scarlet fever convalescent serum. It is safest never to give less than 40 cc. of

TABLE 2.—Number of Days Which Elapsed Between Onset in the First Case and Onset in the Contact Case
(Combined Data of Cook County Hospital and Evanston Health Department)

Days After Onset	No of Cases	Days After Onset	No of Cases
Same day	26	25	1
1	21	27	2
2	24	28	2
3	16	29	3
4	12	30	4
5	17	31	2
6	11	32	1
7	7	33	2
8	4	34	4
9	2	35	5
10	1	36	2
11	1	38	1
12	3	39	2
13	0	40	1
14	2	41	1
15	4	43	1
16	2	47	1
17	1	48	2
18	4	56	1
19	1	57	1
20	5	69	1
21	2	83	1
24	1		
Total			205
Seven or less, total contact cases	.....	130	(63%)
Seven to twenty-eight, total contact cases	.....	39	(19%)
More than twenty-eight, total contact cases	.....	36	(17%)

convalescent serum for this purpose, although smaller doses are sometimes effective.³ It is rarely necessary to use either agent. If no evidence of beginning illness in the contacts is found, it is safe to wait twenty-four hours, at the end of which time the results of the culture and the cutaneous tests are known. Reading of the temperature and inspection of the skin and the mucous membrane are again made, and persons found susceptible or showing signs of beginning illness are treated in the manner outlined. However, one week later their active immunization with 5 graduated doses of scarlet fever toxin (or more injections in less rapidly increasing doses⁴) is begun, so that they will be immunized by the time the quarantine is lifted. Among those found not to be ill, the following situations may be present:

1. A contact may be found susceptible and harboring hemolytic streptococci. If he can be kept under daily observation, he may start active immunization at once, so that he will be immunized completely or partially by the time quarantine is lifted and contact with the convalescent patient, who is usually still a carrier of scarlatinal streptococci, is resumed. He must also be isolated from susceptible persons, because he is a carrier and hence capable of spreading scarlet fever. If he cannot be observed daily it is safer to give him passive immunization at once but to begin active immunization one week later.

2. A contact may be found susceptible but not infected. He should start active immunization at once, so that he will be protected when the convalescent

carrier returns, but need not be quarantined, as he himself will not spread the disease.

3. A contact may have a culture positive for hemolytic streptococci but a negative Dick reaction. He needs neither passive nor active immunization but should be kept isolated from susceptible persons because the streptococci which he harbors must be regarded as scarlatinal streptococci until proved otherwise.

4. A contact may have a negative culture and a negative cutaneous reaction. He needs no treatment but should be kept from carriers so that he will not himself become a carrier.

An example of the procedures outlined is the following situation in the practice of one of us.

A school girl aged 6 years came down with scarlet fever. Her mother, an 8 year old sister and a 3 year old sister were examined. No sign of beginning illness was found in the contacts. All were given a Dick test and had cultures of material from the throat and nose made on blood agar plates.

Next day the mother, who was pregnant, was found to have a positive cutaneous reaction, indicating susceptibility to scarlet fever, and a culture positive for hemolytic streptococci. In order to avoid a possible serum reaction she was given 40 cc. of human convalescent scarlet fever serum instead of commercial antitoxin. This was repeated two weeks later, because the patient with scarlet fever was kept at home and the mother was her attendant. Active immunization was not undertaken at this time because of the pregnancy.

The 8 year old child was found susceptible, but her culture was negative for hemolytic streptococci. With the permission of the Evanston health department, she was removed to her grandmother's home and allowed to continue in school. Active immunization was started at once, and she had completed her 5 doses before she was allowed to return to her home.

The 3 year old child was found both susceptible and infected with hemolytic streptococci. She was given a prophylactic dose of scarlet fever antitoxin rather than convalescent serum because it was cheaper and more effective in our own experience and because the possible effects of serum sickness were not so serious in her case as in that of the mother. The mother

TABLE 3.—Data on Patients Cared for at the Evanston Hospital (1935 to 1940) on Whom the Dick Methods for Handling Contacts Were Used

Total number of patients	117
Average number of contacts in each home	4.3
Estimated total number of contacts	503
Known number of contact cases of scarlet fever	0

TABLE 4.—Results of Cultures Made for Persons Directly Exposed to Scarlet Fever

Cultures for Hemolytic Streptococci					
Positive		Negative		Total	
Num- ber	Per- centage	Num- ber	Per- centage		
Adults	32	52	63	100	
Children (under 15 years)	25	58.1	169	41.9	
	57	53	237	294	

was instructed in techniques of avoiding infection, and, although this child remained in the home, active immunization was begun one week later. She had had 4 doses before the official period of quarantine was over, but she was kept from direct contact with the patient until completion of her immunizing series.

The father had been out of town when the patient contracted scarlet fever. He did not return to the home, but a culture and a cutaneous test were made. Both gave negative results. Hence he did not need immunization or isolation.

3 Rhoads, Paul S. and Gasul, B. J. Convalescent Scarlet Fever Serum and Commercial Antitoxin, J. A. M. A. 102:2005 (June 16) 1934.

4 Rappaport, Benjamin: Active Immunization to Scarlet Fever with Less Reaction, J. A. M. A. 106:1076-1078 (March 28) 1936.

THE EFFECTIVENESS OF MODERN METHODS
OF CONTROL

Numerous reports by the Dicks and others have given evidence of the effectiveness of the procedures outlined in checking the spread of scarlet fever.² Our own experience adds to this evidence. Two of us (P. S. R. and B. R.) have for years attempted to carry them out in the homes of our private patients with scarlet fever. The figures on 117 patients cared for by

TABLE 5.—Results of Dick Tests on Persons Directly Exposed to Scarlet Fever

	Positive		Negative		Total
	Number	Percentage	Number	Percentage	
Adults.....	26	38.8	41	61.2	67
Children (under 18 years).....	149	73.8	53	26.2	202
	175	65.1	94	31.9	269

TABLE 6.—Summary of Typical Sequence of Cases of Scarlet Fever in Two Families of the Cook County Hospital Series

Name	Age	Onset	Admission	Discharge
First family:				
Frank.....	6	9/14/39	9/18/39	10/13/39
George.....	10	10/17/39	10/19/39	11/14/39
Geraldine.....	8	10/18/39	10/19/39	11/18/39
Lee.....	4	11/ 1/39	11/ 2/39	11/29/39
Paul.....	8 mo.	11/ 9/39	Cared for at home	
Second family:				
Lillian.....	9	12/ 9/39	12/11/39	1/ 6/40
Clifton.....	10	1/ 9/40	1/13/40	2/ 6/40
Mildred.....	13	1/14/40	1/15/40	2/11/40

us in Evanston since 1935, including both private and service patients, are shown in tables 3, 4 and 5. Prior to the autumn of 1938, it was not possible to make cultures and perform Dick tests for all the home contacts of the service patients because not all the families would cooperate; hence the discrepancy between the number of contacts and the number of tests performed.

However, it was possible at times to get the private physician who sent in the patient to take these precautions, and in every instance careful instructions as to the protection of other children in the homes were given. In spite of the incompleteness of the work, no known contact cases occurred; at least there were none in our private practice, and no contacts were brought to the hospital from the homes of service patients. In the fall of 1938 the commissioner of health of Evanston (W. H. T.) began doing cutaneous tests and making cultures for the contacts of all service patients, and the Preventive Medicine Clinic of the Evanston Hospital, under the direction of Dr. Joseph Rappaport, undertook the active immunization of contacts. The incidence of scarlet fever dropped from 188 cases in 1938 to 65 cases in 1939. This active immunization of contacts may have been in part responsible.

COMMENT

The data presented reveal that the large majority of children who have not been actively immunized against scarlet fever by repeated doses of the sterile toxin or by having the disease are susceptible. A fairly large proportion of adults are susceptible (table 5). More than half of the persons studied who had been in direct contact with patients with scarlet fever harbored hemolytic streptococci, most of which were undoubtedly of scarlatinal strains (table 4). Sixty-

three per cent of patients with scarlet fever were found to be carriers of hemolytic streptococci at the end of their quarantine of twenty-eight days. That these convalescent carriers often are the source from which scarlet fever spreads is shown by the data given and by such records of family contact as are listed in table 6.

SUMMARY AND CONCLUSIONS

In a series of 1,518 consecutive cases of scarlet fever studied at the Cook County Hospital, Chicago and in the city of Evanston, 23.3 per cent were "family contact" cases. It is obvious that the present quarantine regulations in Illinois (in which cultures on blood agar plates are not provided for) are ineffective in preventing the spread of scarlet fever, particularly to contacts in the home.

In a series of 117 consecutive cases in which we used the methods advocated by the Dicks for the prevention of the spread of the disease, there were no contact cases. These methods include cutaneous tests for susceptibility and the making of cultures on blood agar plates for all contacts, the passive immunization of persons about to come down with the disease and later the active immunization of these and all other susceptible contacts.

ABSTRACT OF DISCUSSION

DR. A. T. McCORMACK, Louisville, Ky.: This is a perfect demonstration of the practice of preventive medicine by the family physician; until it is universally adopted by the family physician it will be necessary still for health departments to interfere unnecessarily with cases of infectious diseases, such as scarlet fever. In Kentucky we have adopted this procedure as a public health measure. A patient with scarlet fever is not released until there are two negative cultures. By this method the period of quarantine for scarlet fever is reduced because many patients become free from the hemolytic streptococci in less than twenty-eight days. Cases of scarlet fever have not developed during an epidemic in contacts under the observation of the state health department—now over 100,000—in which the third dose of the toxin has been administered. The contacts are not immunized by the third dose, but they are sufficiently immunized for the control of that particular exposure. Our Kentucky plan is unique. We go into institutions or into schools at the request of the authorities. We do not go into a county unless the county medical society invites us. At a meeting of the county society we demonstrate the technic to those physicians who are willing to learn it. In the cases that have been controlled under our own observation we have not had practically any serious reactions. In colleges and schools we have never had a student miss class. The family physician ought to do vaccinations. The family physician ought to do immunization against diphtheria, against scarlet fever and against every other disease for which immunization procedures have been developed. Every health department in the United States hopes and prays that physicians in other branches of the profession will accept that responsibility. One other point frequently made is that there are few deaths from scarlet fever. Our statistics show that the disorders and the complications following scarlet fever are more severe, expensive and troublesome than the deaths that occur from the disease. The majority of sequelae occurring in the milder cases are those in which there is no crupion, in which there are merely the scarlet fever and sore throat and in which the only means of definite diagnosis is in the laboratory. We have some 600 cases that we have followed for fourteen years since their original immunization; 80 per cent are still immune. Two injections at intervals of two, three, four or five years restore the immunity in the majority. The number who have deficient immunity mechanism and are not capable of immunization for a sufficiently continued length of time to make them immune for life is extremely small. In every county in Kentucky in which this procedure has been carried out we realize that we accepted a distinct responsibility, because the more immune individuals there are in the county

the less danger there is of an epidemic; but there is more danger to the nonimmunized individuals because there are more immune carriers.

DR. JESSE G. M. BULLOWA, New York: Dr. Rhoads advocates that there be active immunization, passive immunization and a longer quarantine with reliance on cultures for streptococci for the termination of quarantine. The authors' demonstration of the large diminution in the number of scarlet fever patients in Evanston would be more convincing if it was shown that there was no increase in the number of streptococcal sore throats without rash. I don't know whether that information is available. With active immunization I am in accord. At Willard Parker Hospital between 1933 and 1937 we had one thousand and fifty-seven student nurses from various hospitals. Thirty-one, or 2.9 per cent, came down with scarlet fever during their training. Dr. Irving Klein, the deputy medical superintendent, then undertook re-Dick testing at Willard Parker Hospital to determine whether the nurses were immune before duty in the scarlet fever wards. From 1937 to 1940 we had eighteen hundred student nurses, and no nurse who had a negative Dick test came down with scarlet fever. I do not favor lengthening the period of isolation or reliance on cultures. In New York City we quarantine scarlet fever for only twenty-one days. Before 1917 we had a quarantine period of thirty-five days. It was then reduced to thirty days, and finally in 1934, it was reduced to twenty-one days, because, using the borough of Brooklyn as a control against the other boroughs, it was found that there were few more return cases with the twenty-one day quarantine than there were with the thirty day quarantine. A few additional cases developed, 3 per thousand. Had we quarantined for thirty days instead of twenty-one days, there would have been an extra quarantine period of nine thousand days per thousand patients with all its expense and unnecessary hardship, especially for adults. Last year at Willard Parker Hospital we had 2,473 patients with scarlet fever. In the first twenty-eight days after discharge we had 46 return cases, or 1.9 per cent. Strict clinical criteria are employed. We do not use cultures for discharge because they may give a false sense of security. That is the chief objection. Duration of illness is not a criterion for retaining or discharging patients. In 1936 we had a patient who had been in the hospital with a discharge from the ear after a very stormy course, and on the one hundred and tenth day cultures of material from that patient were taken. *Streptococcus hemolyticus* was found and disregarded and there was a return case. Last year we had a similar case.

DR. PAUL S. RHOADS, Evanston, Ill.: I believe Dr. Bullowa has misinterpreted my recommendations about the termination of quarantine. I don't advocate that patients with positive cultures be held indefinitely. I think that would fill our fever hospitals unduly at the present time. My point is that persons with whom the discharged patient will come in contact when he leaves the hospital should be immunized so that they will not get scarlet fever when the carrier returns home; not that the patient be held indefinitely in the hospital until his cultures become negative. Also I should like to say that I think we should never depend on one culture for our final result in determining whether or not scarlet fever streptococci are present in the throat and nose. I think we should have a series of at least three negative cultures before we say that a patient is no longer a carrier of hemolytic streptococci. That might account for two cases Dr. Bullowa mentioned, in which no hemolytic streptococci were found at the time the patients were discharged, and yet the patients seemed to take scarlet fever home to their families. He raised the question Does the incidence of so-called nonspecific hemolytic streptococcus tonsillitis go up when the incidence of scarlet fever is decreased by immunization? That brings up the old question of whether scarlet fever immunization immunizes only against the toxemia, the erythrogenic toxin, or whether it immunizes against invasion by the hemolytic streptococci themselves. I shall not go into that question here because there is not enough time; also I don't know all the answers. I am talking here about scarlet fever. In our experience we can't answer the question of whether the incidence of streptococcal tonsillitis changes after immunizing nurses, for instance, in the contagious hospital, because cultures for hemolytic streptococci from sore throats were not taken prior to the

time immunization of nurses against scarlet fever was begun at Cook County Hospital. After that time all of them were immunized, so we don't have any certain basis for comparison. No completely immunized nurses contracted scarlet fever. Place, who made such a study in Boston City Hospital, found that after immunization of the nurses in the contagious hospital the incidence of scarlet fever was cut down to practically nil. Also the incidence of nonspecific tonsillitis was cut down.

TREATMENT OF EXPERIMENTAL TUBERCULOSIS

USE OF SODIUM P,P'-DIAMINODIPHENYLSULFONE-
N,N'-DIDEXTROSE SULFONATE ("PROMIN")
WITH NOTES ON SOME TOXIC EFFECTS
OBSERVED IN MAN

H. CORWIN HINSHAW, M.D., PH.D.
AND
WILLIAM H. FELDMAN, D.V.M., M.S.
ROCHESTER, MINN.

Evidence has been obtained¹ that sulfanilamide may modify the course of experimental tuberculosis in guinea pigs. Similar results were reported for sulfapyridine² and for azosulfamide.³ These results now have been confirmed by a sufficient number of laboratories to require their acceptance. The effect of these drugs appeared to be one of retardation of the rate of development of the disease in treated animals when they were compared with untreated controls. In addition a definite alteration in the histologic features of the lesions was described.⁴

Our first experiment with sodium p,p'-diaminodiphenylsulfone-N,N'-didextrose sulfonate⁵ established the fact that this drug could inhibit, partially or totally, the development of experimental tuberculosis in guinea pigs. In this experiment treatment was started two days before inoculation with human tubercle bacilli. The conditions of this earlier experiment did not simulate natural infection, since the infecting organism had been introduced into animals already receiving the chemotherapeutic agent. A second experiment then was devised to determine whether established tuberculosis of guinea pigs could be arrested or eliminated by this compound. At the same time the first experiment was repeated for confirmation.⁶

Eighty guinea pigs were inoculated with a lethal dose of human tubercle bacilli (0.0005 mg. of strain H37RV). These animals were divided into eight groups. Group 1 consisted of 12 untreated control animals. Group 2 consisted of 8 animals that received sodium p,p'-diam-

This drug was kindly supplied to us by Dr. E. A. Sharp of Parke, Davis & Co., Detroit.

From the Division of Medicine, Mayo Clinic (Dr. Hinshaw), and the Division of Experimental Medicine, Mayo Foundation (Dr. Feldman).

Read before the Section on Pharmacology and Therapeutics at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 4, 1941.

1. Rich, A. R., and Follis, R. H., Jr.: The Inhibitory Effect of Sulfanilamide on the Development of Experimental Tuberculosis in the Guinea Pig. *Bull. Johns Hopkins Hosp.* 62: 77-84, 1938.

2. Feldman, W. H., and Hinshaw, H. C.: Effect of Sulfapyridine on Experimental Tuberculosis in the Guinea Pig. *Proc. Staff Meet., Mayo Clin.* 14: 174-176 (March 15) 1939.

3. Birkhaug, Konrad: Treatment of Experimental Tuberculosis with Sulfanilamide. *Brit. M. J.* 2: 54-57 (July 8) 1939.

4. Feldman, W. H., and Hinshaw, H. C.: Sulfapyridine in Experimental Tuberculosis: The Pathology of Experimental Tuberculosis of Apparent Toxic Changes in Guinea Pigs Treated with Sulfapyridine. *Am. Rev. Tuberc.* 41: 732-750 (June) 1940.

5. Feldman, W. H.; Hinshaw, H. C., and Moses, H. E.: The Effect of Promin (Sodium Salt of p,p'-Diaminodiphenylsulfone-N,N'-Dextrose Sulfonate) on Experimental Tuberculosis: A Preliminary Report. *Proc. Staff Meet., Mayo Clin.* 15: 695-699 (Oct. 30) 1940.

6. Feldman, W. H.; Hinshaw, H. C., and Moses, H. E.: The Treatment of Experimental Tuberculosis with Promin (Sodium Salt of p,p'-Diaminodiphenylsulfone-N,N'-Dextrose Sulfonate): A Preliminary Report. *Proc. Staff Meet., Mayo Clin.* 16: 187-190 (March 19) 1941.

inodiphenylsulfone-*N,N'*-didextrose sulfonate continuously from the day of inoculation. Group 8 consisted of 20 animals whose treatment was started two days before inoculation with tubercle bacilli. The remaining groups (3, 4, 5, 6 and 7) each contained 8 animals and treatment was delayed after inoculation for three days, one week, two weeks, four weeks and six weeks respectively. In all groups the drug was mixed with the food in a concentration of 1 per cent. The amount of drug consumed by each guinea pig daily was estimated to be about 300 to 400 mg. Group 8 constituted a repetition of our previously reported experiment.⁶ Groups 6 and 7 were treated so late after inoculation that we expected them to yield results similar to those of the control group and we were surprised when this did not occur.

In all the control animals (except 1 which died eight days after inoculation) widespread visceral tuberculosis developed. The disease was sufficiently severe to account for the death of all controls. The last animal of the control group died one hundred and eighty-nine days after inoculation. At this time 57 (84 per cent) of the treated animals were living and apparently well. Of the 11 that had died prior to this time none had grossly detectable visceral tuberculosis. The experiment was then terminated by killing all remaining animals one hundred and ninety-two days after the date of inoculation.

At necropsy it was not possible to detect any gross lesions of tuberculosis in 41 (60 per cent) of the 68 treated animals. In 24 of the remaining 27 animals the grossly visible lesions were limited to tiny nodules in the subcutaneous tissue at the site of inoculation, to involved regional lymph nodes or to both. Only 3 treated animals (4 per cent) had sufficient residual tuberculosis to be detected grossly in the viscera, and in no instance did the disease appear to be sufficiently extensive to have caused death of the animal. We noted no significant differences between animals that had received treatment before infection and those whose treatment was delayed for as long as six weeks.

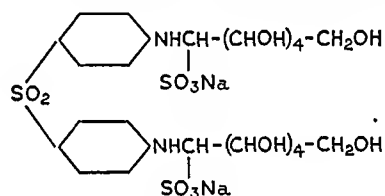
Convincing evidence was obtained that the treated animals had been successfully inoculated with tuberculosis. Previous extensive experience with this strain has shown its virulence. All control animals died of tuberculosis, and microscopic examination of treated animals demonstrated evidence of preexisting or inactive tuberculosis in 40 (59 per cent) of the 68 treated animals. The lesions observed were of types rarely seen in guinea pigs. Caseation necrosis was absent. Fibrosis was frequently observed, sometimes with encapsulation of the lesions. Partial or complete calcification was occasionally noted, which was surprising in view of the relatively short duration of the disease (approximately six months). Tissues contiguous to lesions showed no reaction to suggest active or progressive disease. Tuberculosis was not detected in many of the treated animals. In the remainder it was restricted greatly in distribution, was reduced in quantity in all instances and was altered in character to a striking degree. This was regarded as evidence that chemotherapy had been successful in restraining the disease and in producing retrogressive changes in the lesions.

Sodium *p,p'*-diaminodiphenylsulfone-*N,N'*-didextrose sulfonate now has been employed by us and our associates⁷ in treatment of more than 75 patients who had various infections, including primary pneumonia, post-

operative atelectasis and pneumonia, pulmonary tuberculosis, meningeal tuberculosis, renal tuberculosis and cutaneous tuberculosis. The drug has been administered orally, subcutaneously, intramuscularly and intravenously. The intravenous and subcutaneous treatments have been given both by intermittent injections and by continuous drip. Orally the dosage has ranged from 1.2 to 3.2 Gm. a day. As much as 16.0 Gm. daily has been administered parenterally.

This compound is highly soluble and usually has been employed in 40 per cent aqueous solution for parenteral administration. Subcutaneous injections are moderately to severely painful. Intramuscular injections are tolerated better, and intravenous injections produce no unfavorable reaction if given slowly.

The only serious toxic effect noted among patients receiving the drug has been the development of hemolytic anemia, and this has occurred in serious degree only after oral administration. In 1 case severe hemolytic anemia developed on the third day of treatment while the patient was receiving 1.6 Gm. a day orally. This condition resembled the acute anemia which rarely occurs after treatment with sulfonamide drugs and may have represented a drug idiosyncrasy. However, sodium *p,p'*-diaminodiphenylsulfone-*N,N'*-didextrose sulfonate displayed a uniform tendency to produce anemia if given orally in large doses over a prolonged period. Doses of 1.6 to 3.2 Gm. daily by mouth were tolerated for



Chemical structure of sodium *p,p'*-diaminodiphenylsulfone-*N,N'*-didextrose sulfonate.

eight to ten days, after which the hemoglobin content of the blood tended to fall slowly or rapidly. The evidence indicated that this was a hemolytic effect. Evidence of marked erythrocyte regeneration was noted. When administration of the drug was discontinued, the hemoglobin content of the blood rose within a few days.⁸

Severe anemia has not occurred among patients receiving the drug parenterally. In 1 case in which 12.0 Gm. daily was given intramuscularly slight anemia developed after two or three weeks of treatment, but this was not progressive and did not necessitate interruption of treatment.

Cyanosis, usually of striking intensity, was noted uniformly among patients receiving this drug orally but was rarely seen among those receiving it parenterally. Subjective complaints of headache, lassitude or restlessness were frequent after oral administration but were largely absent when the drug was given parenterally.

Blood concentrations of the drug were maintained at a more uniform level and with much smaller doses when the drug was given orally. The drug enters the cerebrospinal fluid, but its concentration there has been considerably below that of peripheral blood drawn at the same time. We have had the opportunity of making observations on the cerebrospinal fluid only six times on 3 patients, and there was considerable variation in results.

8. Our colleague Dr. B. E. Hall has studied the blood of these patients, and his observations will constitute a separate report.

7. Dr. Karl Pfuetze will collaborate in a subsequent clinical report.

We have preferred the oral route of administration because our results in guinea pigs were obtained by this method. Furthermore, patients prefer to take the drug orally because the relatively mild symptoms noted are less uncomfortable than the distress produced by parenteral injections. It seems probable that the drug undergoes chemical transformation when given by the oral route.

The clinical evaluation of any therapeutic agent in human tuberculosis must be undertaken with the greatest caution. The marked tendency of many forms of the disease is toward steady improvement without treatment. The anticipated clinical course of tuberculosis may be so variable that control evidence is difficult to establish. Therefore we would caution urgently against insecure conclusions in the study of chemotherapy in clinical tuberculosis, recalling the history of tragic disappointments which followed the early use of tuberculin and other forms of treatment. Equal care must be taken lest some treatment be discarded prematurely, especially when there are wide choices of means of administration and dosage. We believe that the drawing of either positive or negative conclusions should be avoided until the force of facts makes these conclusions self evident.

ABSTRACT OF DISCUSSION

DR. J. ARTHUR MYERS, Minneapolis: I had the pleasure of visiting Drs. Hinshaw and Feldman and saw their setup for experimental work and their gross and microscopic post-mortem specimens. The difference between the control and the treated animals is almost unbelievable. Finally, after fifty centuries of trial man has found a drug which apparently is capable of controlling tuberculosis in animals. It will be of interest to know what further studies reveal with reference to the presence or absence of tubercle bacilli in the small atypical lesions of the treated animals, whether these animals will live out the natural span of life without developing significant disease, and whether allergy remains or disappears. The medical profession has been misled many times concerning drug therapy because of statements made on insufficient evidence. Drs. Hinshaw and Feldman are ultraconservative in their statements, and this is laudable. They have pointed out that a great deal of work is necessary to determine the effect of the drugs they are studying on tuberculosis in man. However, it appears that with this or some closely related drug we may be approaching the time when tuberculosis in man can be quickly controlled. The time may come when the person who is found to react to tuberculin but has no other evidence of tuberculosis will be treated by chemotherapy, just as the patient who has a positive Wassermann reaction with no other evidence of syphilis is treated by chemotherapy. I should like to suggest that the physicians of this country allow Drs. Hinshaw and Feldman to proceed unmolested. They have a perfect setup for their experimental studies. They have an abundance of clinical material with which they are cautiously determining the efficacy of chemotherapy on tuberculosis in human beings. They have every necessary qualification for the completion of this work. When they have finished their studies with reference to toxicity, safe dosage and efficacy of the drug they will present their findings to the world.

Cold Exhaustion.—As a result of fatigue an individual wandering in the cold surrenders to an overpowering desire to sleep. During this unconscious state, temperature regulation is disturbed and much heat is lost. The body temperature falls; at 68 F. coma sets in and death results. It has been pointed out that a fall of temperature depresses the dissociation of oxyhemoglobin and tends to lower oxidation in the tissues.—Wright, Samson: *Applied Physiology*. New York, Oxford University Press, 1940.

OBSERVATIONS ON THE IMPLANTATION OF TESTOSTERONE PELLETS

JOSEPH EIDELSBURG, M.D.

AND

ELLIOTT A. ORNSTEIN, M.D.

NEW YORK

Within the past few years the literature on testosterone has become voluminous. In large part it deals with laboratory experiments, animal studies and the like. Carefully controlled clinical observations over long periods of time have been comparatively few. Still, the ultimate goal is the actual clinical application, for without such its importance is reduced and its value largely academic. In our clinic we have treated a large number of patients suffering with a wide diversity of conditions, including the postcastration status, eunuchoidism, hypogonadism of other types such as Lorain-Levi infantilism and hypopituitarism, impotence and others. For clarity and brevity only selected cases will be reported at this time, others being left for later communications.

This report deals with observations on patients chosen from the "hypogonital groups," numbering in all 60, of whom 30 have been given further treatment by implantation, 30 having been treated by injections only. The 30 patients given implantations have received a total of seventy implants.

IMPLANTATION OF TESTOSTERONE PELLETS AS A METHOD OF LONG-CONTINUED TESTOSTERONE THERAPY

Our observations and experiences led us early to realize that the injection therapy would have to be administered frequently, regularly and for long periods. The numerous objections to this soon became apparent to both physician and patient. The work of Brock and Druckrey,¹ Deanesly and Parkes² and Noble³ on animals suggested the subcutaneous implantation of hormone pellets in human beings, and Bishop's⁴ report on the implantation of a tablet of estrone in a woman with relief of menopausal symptoms immediately prompted us to apply this form of therapy in males, using testosterone pellets.

Deanesly and Parkes² clearly demonstrated the "effectiveness of crystalline gonadal hormones when administered by the subcutaneous implantation of solid tablets of the pure substance" in mice, rats, guinea pigs and rabbits. We readily substantiated this in guinea pigs and rabbits. More recently Vest, Drew and Langworthy⁵ have reported similar and more pertinent detailed observations on the monkey. Reviewing Deanesly and Parkes's original reports, they noted that testosterone was absorbed at the rate of approximately 25 per cent a month, giving a calculated average life to an implanted pellet of about four months, although it is possible, and highly probable, that the rate would

The testosterone pellets were supplied by the Schering Corporation through Dr. Max Gilbert.

From the Endocrine Clinic, Department of Medicine, New York Post-Graduate Medical School and Hospital, Columbia University.

Because of lack of space, this article is abbreviated in *The Journal* by the omission of some illustrations. The complete article appears in the authors' reprints.

1. Brock, N., and Druckrey, H.: *Klin. Wchnschr.* 17:23 (Jan. 1) 1938.

2. Deanesly, R., and Parkes, A. S.: *Proc. Roy. Soc., Lond.* 121: 279 (Dec. 7) 1937.

3. Noble, R. L.: *Lancet* 2:192 (July 23) 1938.

4. Bishop, P. M. F.: *Brit. M. J.* 1:939 (April 30) 1939.

5. Deanesly, R., and Parkes, A. S.: *Lancet* 2:676 (Sept. 1) 1939.

6. Vest, S. A., Drew, J. E., and Langworthy, O. R.: *Endocrinology* 27:455 (Sept.) 1940.

vary and that, as the pellet became smaller, the amount absorbed would be less per month and the life of the pellet prolonged, but perhaps with decreased efficacy. They also pointed out that "the rate of absorption from a tablet must depend largely on its surface area, and will therefore be absolutely greater, though proportionately less, from a large tablet than from a small one." Also, "the simplest way to increase the intensity of action would be to insert a number of tablets of a size calculated to last for the desired period." Finally, they concluded that "the technic is particularly useful where a long continued steady effect is required" and suggested that "treatment of very long duration following one administration of hormone will be possible by implantation of tablets."

Our original observations on the implantation of testosterone tablets have already been reported.⁷ A preliminary report on the implantation of testosterone has also been made by Howard and Vest.⁸ This has been carried on until today we have observed a total of 30 patients who have received implants, 7 patients receiving one implant, 14 patients two, 6 patients three and 3 patients their fourth implant, totaling sixty-five implants, plus two occasions on which the implants were ejected spontaneously and three occasions on which the pellets were removed after one, two and three months for weighing and examining them.

It was our original plan to administer treatment by injections of testosterone propionate (25 or 50 mg. three times a week) for a sufficiently long period of time to permit a "build-up" of testosterone effects and then, and then only, to resort to implantations, repeating them at intervals as indicated or required (three to six month intervals). This was carried out in most cases. In some cases no preliminary injections were given, and the desirability or undesirability of this will be further discussed. The first implants were single 200 mg. pellets; later we used two, three or four such pellets in each case, and still later we made observations with one, two, three or four 150 mg. tablets. Finally, bearing in mind Deanesly and Parkes' words that "the simplest way to increase the intensity of action would be to insert a number of tablets of a size calculated to last for the desired period," and that "as the pellet became smaller the amount absorbed would be less per month and the life of the pellet prolonged," we decided to use from six to eight 50 to 75 mg. tablets. Our original method, still employed with the larger pellets, was by the incision and "pocket formation" (to be described later), while our more recent multiple 50 mg. pellet implants were performed with a trocar (described later). Failure of therapeutic response, spontaneous discharge of the pellets and other observations will be described.

REPORT OF CASES

CASE 1.—A. W., a college student aged 20, entered the clinic on May 3, 1938. His family history was irrelevant. When he was 2 years old a right congenital inguinal hernia was repaired, and at 3 he had an uncomplicated attack of mumps. The testicles were never palpated. His growth was entirely normal, pubic hair appeared at 14 but at 16 he became conscious of inadequate sexual growth. A course of treatment with chorionic gonadotropin stimulated the growth of pubic hair, libido and occasional erections. On admission the patient was

acutely conscious of genital underdevelopment, absence of facial hair, a high pitched voice and a lack of confidence which he attributed to sexual inadequacy. Physical examination revealed that the patient was of normal height, had feminine contours and had an extremely youthful appearance. The blood pressure was normal. Genital examination alone showed divergence from the normal. The penis was small, the scrotum was flat and no testicles could be felt. His height was 68½ inches (174 cm.), span 71½ inches (182 cm.), the upper measurement 31½ inches (80 cm.) and the lower 37 inches (94 cm.). The basal metabolic rate was minus 7 per cent. Roentgenograms of the skull and the blood chemistry were normal. The dextrose tolerance curve was 85, 105, 115. Treatment begun in May 1938 consisted of testosterone propionate 25 mg. three times a week, then twice a week by intramuscular injection. A total of 3,500 mg. was administered over a period of sixteen months. The results were dramatic and sustained. The genitals increased appreciably in size, the voice deepened, bodily strength increased and he took on a more muscular and masculine appearance. His weight increased many pounds, and his personal confidence matched his physical gains. After ten months of this therapy intercourse was attempted and was completely successful, with mutual satisfaction for the partners. In October 1939 two 200 mg. tablets were implanted successfully after the first attempt was followed by ejection of the tablets. The satisfactory status was maintained. The patient married and leads a normal sex life, though his wife has been informed of his undoubted sterility. The implant maintained its expected activity for nine months, after which "withdrawal symptoms" appeared. He was reimplanted in September 1940 with 400 mg., with renewal of the testosterone effects.

CASE 2.—F. V. A., a musician aged 29, entered our clinic in November 1939. A brother aged 33 presented, according to the patient, an identical problem, which was genital underdevelopment and inadequate secondary sex characteristics. A high pitched voice and feminine contours were also present. The patient was moderately tall, with a hairless, immature face, wide flared hips and small genitalia. The testicles were small and were located in a small scrotum. Measurements were: height 70¼ inches (178 cm.), span 75 inches (190 cm.), upper 30¾ inches (78 cm.) and lower 39½ inches (100 cm.). The basal metabolic rate was minus 16 per cent and the dextrose tolerance curve 80, 90, 75. Roentgenograms of the sella turcica showed it to be 15 per cent undersize, and there was a delay of about ten years in epiphyseal development. Treatment from Nov. 11, 1939 to Jan. 4, 1940 consisted of 50 mg. of testosterone propionate three times a week. This was followed by a satisfactory increase in the size of the penis, pubic hair and deepening of the voice. On January 5, 600 mg. of testosterone was implanted, with further improvement. The effects began to run down about August and a new implantation (400 mg.) was done in September. He again reports excellent libido and erections and increased general well-being.

CASE 3.—S. L., a medical student aged 20, came to our clinic in December 1939. The past and family histories were irrelevant. His chief concern on admission was inadequate genital development with no change since the age of 15. There was no growth of hair on the face, and the pubic and axillary hair was sparse. The voice was high pitched. On examination, the only divergence from normal was a small penis, shallow scrotum and two small testes. The laboratory data were irrelevant. Treatment, started in December, consisted of 50 mg. of testosterone propionate injected three times a week. Up to Feb. 20, 1940 1,500 mg. was injected. The penis increased decidedly in size, the pubic hair spread, the voice deepened and erections were common. On February 23, 600 mg. of testosterone was implanted. In August after the growth of some facial hair, the effects began to subside, and in September 350 mg. was inserted by trocar (seven 50 mg. pellets). Within two weeks he again described the return of "full" response.

CASE 4.—B. Z., a student aged 17, was admitted to the clinic in November 1939. The family history was irrelevant. He had undergone an operation for bilateral inguinal hernias

7. Eidelberg, Joseph, and Ornstein, E. A.: *Endocrinology* 26: 46 (Jan.) 1940.

8. Howard, J. E., and Vest, S. A.: *Am. J. M. Sc.* 198: 823 (Dec.) 1939.

at the age of 6 years. The testicles were undescended and only one was found in the canal at operation, but no correction was attempted. The immediate problem was undescended testes and genital underdevelopment. Physical examination showed him to be well developed and normal in all respects but genitally. There was a moderate amount of axillary and pubic hair, with

ference. The pubic hair was of female distribution and sparse. The scrotum was shallow and contained two small testicles. The significant laboratory data were a basal metabolic rate of minus 14 per cent, and bone age studies showed a two to three year delay in ossification. In April 1940 400 mg. of testosterone was implanted (two 200 mg. pellets). After two months, the voice deepened and the penis increased in size. Erections were active and a circumcision was performed in August. After five months there was a moderate recession in the size of the penis and number of erections. A second implant was done in September with six 50 mg. tablets, and he again reports general well-being, erections and satisfactory libido.

CASE 6.—F. P., aged 32, an accountant, was first seen by us in May 1939. His family and past histories were irrelevant. He was tall and well built, and his main wish was to have something done about the "size of his genitals," which were considered totally inadequate. He had little or no sex consciousness and had never shaved or masturbated. His testicles had always been small and in the scrotum. Breast tissue had developed in the past two years. The skin was smooth and clear, and there was no beard or axillary hair. The physical examination was of no significance, except for the genitals. The hips were wide, the pubic hair was slight in amount and the penis was small. The height was 73 inches (185 cm.), span 81 inches (206 cm.), the upper measurement 32 inches (81 cm.) and the lower 41 inches (104 cm.). The laboratory data revealed a basal metabolic rate of minus 15 per cent. Treatment started in July 1939 consisted of 25 mg. of testosterone propionate three times a week for two months. There followed considerable enlargement of the penis. The testicles and scrotum also increased in size. The voice deepened and more pubic hair appeared. On September 19, 200 mg. of testosterone was implanted, but by Jan. 5 1940 the tablet was not palpable and the effect had subsided. However, an extremely

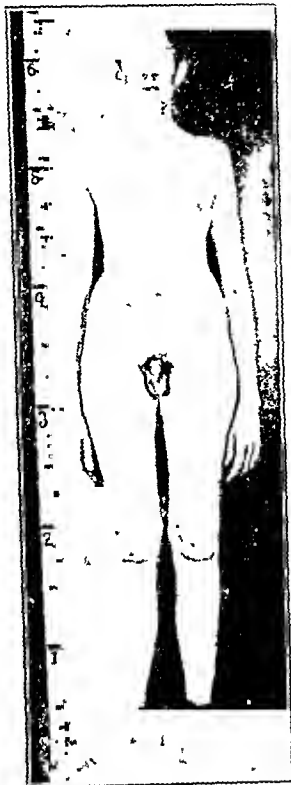


Fig. 26 (case 6).—Appearance in June 1939.



Fig. 27 (case 6).—Appearance in January 1940.

feminine distribution. The penis was 2 inches (5 cm.) long and 3 inches (7.6 cm.) in circumference. The testicles were not felt. The measurements were 67 inches (170 cm.) in height, span 67 inches, upper 30 inches (76 cm.) and lower 37 inches (94 cm.). The basal metabolic rate was normal and the dextrose tolerance curve was flat, with values of 75, 82, 65. Roentgenograms of the wrists showed slight delay in epiphyseal union. Treatment begun in December 1939 consisted of 50 mg. of testosterone propionate three times a week. After one month there was a satisfactory increase in the size of the penis. In January 1940 a 200 mg. tablet of testosterone was implanted. After another month, hair appeared on the upper lip, the left testicle was palpated in the inguinal canal and the penis further increased in size. In April the penis was still growing slowly, erections were frequent, masturbation was followed by ejaculation and the tablet was still palpable. In September the effects were "running down" and testosterone (six 50 mg.) pellets were inserted by trocar. He has since maintained what appears to be a normal status.

CASE 5.—T. McH., aged 21, who entered our clinic in March 1940, had been receiving treatment elsewhere for sexual underdevelopment for the past two years with anterior pituitary extracts, a testicular preparation and 5 mg. doses of testosterone propionate, later increased to 25 mg. twice a week. The latter treatment had caused increased growth of the penis, pubic hair, height and weight. Treatment was continued intermittently but with little progress after the initial surge. The patient's height was 69 inches (175 cm.), span 71 inches (180 cm.), upper measurement 29½ inches (75 cm.) and lower 39½ inches (100 cm.). The physical examination was negative except for the genitals. The penis was below average in size, measuring 1½ inches (3.8 cm.) long and 3 inches (7.6 cm.) in circum-



Fig. 28 (case 6).—Appearance in June 1939

severe facial acne appeared which was treated locally. Circumcision was also performed. At this time, January 1940, 600 mg. was implanted—three 200 mg. tablets. The effect continued most satisfactorily until July and then began to decline. On October 2 350 mg. was implanted again with considerable and excellent effects.

CASE 7.—F. B., aged 27, who came under observation on Nov. 14, 1939, had the usual chief complaints of small genitalia, rare erections, absence of facial and axillary hair and sparse pubic hair. Physical examination was negative, aside from these abnormalities. His basal metabolic rate was minus 2 per cent. Blood pressure was normal. He weighed 144 pounds

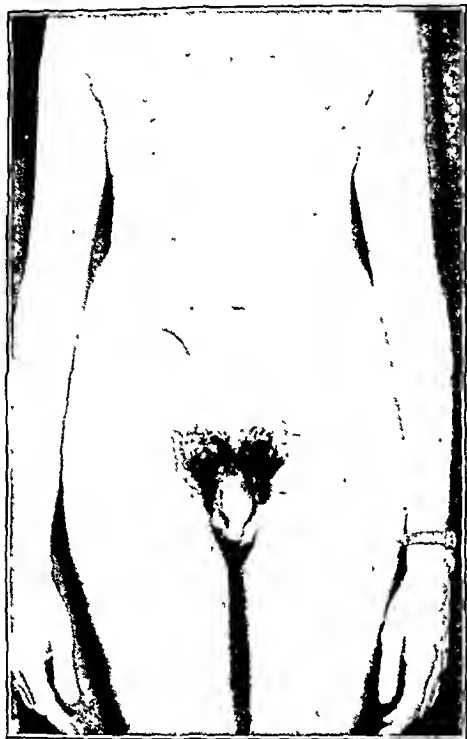


Fig. 29 (case 6).—Appearance in January 1940.

(65.3 Kg.). He received 700 mg. of testosterone propionate by injection from Nov. 16, 1939 to Jan. 1, 1940. The response was well defined. On January 2 two 200 mg. tablets of testosterone were implanted. The effect was maintained satisfactorily until July, when it began to decline, and by August he complained of a decrease in the size of the penis, absence of libido and a loss of 15 pounds (6.8 Kg.) (from 160 to 145 pounds [72.6 to 65.8 Kg.]). October 1, 300 mg. was again implanted, and the original satisfactory status returned in about two weeks.

RATE OF ABSORPTION OF IMPLANTED PELLETS

Deanesly and Parkes' ⁵ original animal studies suggested that approximately 24 or 25 per cent of the implanted pellet of testosterone was absorbed per month when pellets weighing 29 mg. and 100 mg. were used, the determinations of amounts absorbed made after forty-five and forty-one days. One must remember the size of their pellets and the animals used (guinea pigs). Vest, Drew and Langworthy, ⁶ in the monkey, demonstrated that 184.5 mg. was absorbed in ninety-two days from two pellets (166.5 mg. and 243 mg.) and 325 mg. absorbed in one hundred days from two pellets (225 mg. and 267 mg.). The calculated average amounts of substance absorbed per day were about 2 mg. and 3.25 mg., the extremes being 1.4 mg. and 4.7 mg. for single pellets.

On three occasions we removed implanted pellets from patients after one, two and three months.

EXPERIMENT 1.—Two pellets were inserted weighing 150 mg. each, a total of 300 mg. After one month they were removed and weighed, one pellet weighed 95 mg. and the second 115 mg.

totaling 210 mg. This represented an absorption of 90 mg. in this, the first, month, or 30 per cent. The average amount of substance absorbed per day was therefore 3 mg.

EXPERIMENT 2.—Two pellets were inserted weighing 150 mg. each, a total of 300 mg. After two months they were removed and weighed, one pellet weighing 85 mg. and the second 55 mg., totaling 140 mg. This represented an absorption of 160 mg. in two months, or 53 per cent. The average amount of substance absorbed per day was therefore 2.66 mg.

EXPERIMENT 3.—Two pellets weighing 300 mg. on insertion were removed after three months and weighed a total of 95 mg. (35 mg. and 60 mg.). This represents a total absorption of 205 mg., or 68 per cent, or an average absorption of 2.28 mg. a day.

However, one must note the wide range of the weight of the removed pellets and the possibilities resulting from overlying or overlapping of pellets. Unquestionably the size of the pellet would make a further variation. However, the constancy of the daily average is striking. Also it appears that the first month's absorption was about 30 per cent, the first two months about 53 per cent (or 23 per cent in the second month) and 68 per cent absorbed in the first three months (or about 15 per cent in the third month). Thus with each passing month the rate of absorption decreased, probably as the total surface exposed decreased, as surrounding tissue reaction progressed and for other possible reasons.

Nevertheless, the clinical observations add up to one fact, namely that most patients were definitely benefited by implantation, just as they were by injections, and that as time progressed the effects gradually subsided. However, reimplantation could be performed readily, and with it there were renewed effects of testosterone therapy. As demonstrated, some patients returned for reimplants in four months, others in six months, while still others were not given reimplantations for eight or ten months. This was to be expected as the so-called regression or withdrawal symptoms appear at variable times, or even fail to appear in occasional cases.

ENCAPSULATION OF IMPLANTED PELLETS

In several animals (rabbits), pellets of testosterone (50 and 150 mg.) were inserted and removed at varying intervals. At no time were surrounding reactions sufficient to warrant a description of capsule formation. However, several clinical observations are worthy of special note.

CASE 8.—B. C., aged 32, came under observation on Nov. 20, 1939. His family history was irrelevant. He had a congenital dislocation of the left hip and had had a number of operations thereon. He had always been conscious of a lack or failure of genital development and of inadequate sex characteristics, especially so since the age of 17. There had never been any facial or axillary hair, but there had been a slight growth of supra-pubic hair. His voice was feeble and high pitched. Erections occurred on rare occasions. Physical examination revealed that he was tall and thin, with long extremities, distinct genital underdevelopment, no facial or axillary hair and a slightly female escutcheon. There was a wide scar of the operations performed on his left hip. His physical examination was otherwise negative. The blood pressure was 130 systolic and 75 diastolic; his weight was 136 pounds (61.7 Kg.) and his height 70¼ inches (178 cm.). The basal metabolic rate was minus 13 per cent. The dextrose tolerance curve was 65, 85, 67. Roentgenograms revealed a rather small, shallow sella turcica. The testes were very small, the scrotum was thin and small and the penis small and shrunken. From December 1 to December 26 he received a total of 500 mg. of testosterone propionate by injection. Erections appeared frequently, onanism

with orgasm was reported, his voice became husky and the genitals showed unmistakable evidence of improvement and growth. On December 26 one 200 mg. tablet was inserted. On Feb. 2, 1940 he reported that there was no further progression but rather a stationary status for the past several weeks. The pellet was definitely palpable, and, in comparison to other cases six to eight weeks following implantation, it seemed to be large. On March 26 the tablet was still very large, the erections had ceased and the genitals had receded somewhat in size. On March 29 600 mg. of testosterone was implanted (three 200 mg. pellets). April 12 the penis again was larger, erections were frequent and he weighed 148 pounds (67.1 Kg.), but by May 3 the maximum effect had passed and the newly implanted pellets were still distinctly palpable, as was the pellet implanted in December. On June 7 the pellet inserted on Dec. 26, 1939 was removed (five and one-half months after implantation). There appeared to be a definite dense capsule surrounding the hard center (the pellet). The laboratory reported that the specimen was an irregular, oval mass of fat and fibrous tissue 17 by 10 by 8 mm. On section, a band of gray fibrous tissue 2 mm. thick surrounded a yellow calcific mass about 5 mm. in diameter. Microscopically the specimen revealed a thick capsule of connective tissue which was moderately dense and contained a number of giant cells of foreign body type. No foreign bodies were seen in them, however. The diagnosis was foreign body granuloma (Dr. M. M. Richter). During July and August all testosterone effects were practically absent. In September injections were resumed, 25 mg. three times a week, with renewal of testosterone effects—growth of genitalia, erections, change in voice and others.

Thus in an occasional case a definite reaction occurs about the implanted pellet. This seems characteristic of the individual patient and may reappear with subsequent implantations. On the other hand, we have repeatedly reimplanted into sites of the original implantations at intervals of three, six and ten months, without finding any evidences of the originally implanted pellets, or evidences suggesting capsule or scar tissue formation. There were no evidences of interference with the absorption of the pellets inserted at the second or third implantation.

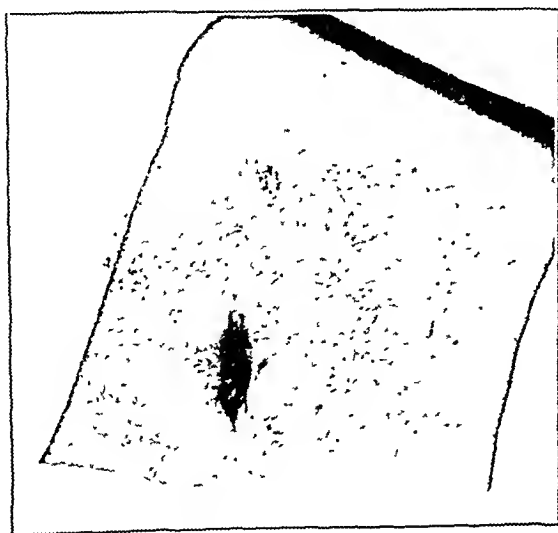


Fig. 46—Step 2 in implantation technique

Another experience is worthy of note and further emphasizes this observation:

CASE 9.—E. J. S., a man aged 52, single, was first seen by us Dec. 2, 1939. The only important facts in his previous history were as follows: He was well and normal in every way until at the age of 20 he had an episode of hemoptysis

and was told he had pulmonary tuberculosis. He spent one year in a sanatorium and was discharged as "cured." His life from 21 to 40 years of age was that of any normal adult. He had begun to shave regularly at 16. He was normal sexually and had no complaints. At 40 a right orchiectomy was done because of tuberculosis; about two years later a left

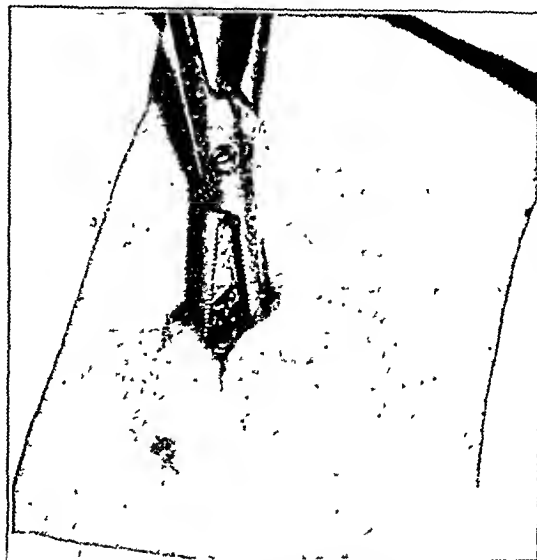


Fig. 47.—Step 3 in implantation technique.

orchiectomy was performed for the same reason. Since then he gradually gained about 25 pounds (11.3 Kg.), became nervous and irritable, frequently became hot and flushed and would break into profuse sweats. His facial hair disappeared almost entirely and his penis slowly grew smaller. The breasts slowly increased in size. All libido disappeared and no erections occurred. His physical examination revealed the status described but was otherwise negative. The blood pressure was 130 systolic and 75 diastolic, and all laboratory studies were negative. He was considered to be a true postoperative castrate or eunuch, and on March 6, 1940 a total of 450 mg. of testosterone was implanted in the form of three 150 mg. tablets. For about four or five weeks thereafter the nervousness, tremulousness, sweating and weak feeling decreased and then disappeared. His sallow, yellowish skin took on a more ruddy appearance. There was some growth of axillary and facial hair. His penis lost its shrunken appearance and seemed to grow, and many erections occurred. He even practiced some masturbation. But by April 21, seven weeks after the implantation, he noticed complete subsidence of the testosterone effects, and he gradually returned to the original status. The pellets were still distinctly palpable. On May 18 eight 50 mg. pellets (400 mg.) were inserted. For two or three weeks there was a suggestion of testosterone effect, but on June 8 it was decided that the effect was negligible. Several more weeks were allowed to elapse, and since he had again returned to the original status he was given a total of 1,000 mg. of testosterone propionate by injection over a period of six weeks during July and August. Feeling improved and disliking the injections, he ceased treatment, believing he was now cured, despite advice to the contrary.

This patient undoubtedly derived some benefit from the first implant, but there was less by far than would be expected, and the duration was much too short. In addition, the pellets remained distinctly palpable. Reimplantation led to a similar experience. It was concluded that we were again dealing with the process of encapsulation. Injections led to what appeared to be definite full response. Of the 30 patients treated by implantation, 3 have failed to respond sufficiently, and we believe that the failure was due to the process of encapsulation which prevented or retarded absorption.

DOSE IMPLANTED AND USE OF FEW LARGE PELLETS
VERSUS MULTIPLE SMALL PELLETS

As described, amounts varying from 150 mg. to 900 mg. were inserted. Unquestionably the largest dose gave greater response than the smallest. However, it is conceivable that an optimum dose should be ascertained if possible, for the substance is too valuable to be wasted unnecessarily and indiscriminately. From our observations it appears that from 300 to 450 mg. usually appeared adequate for satisfactory results, but allowances must be made for individual cases. Further, should one implant two 200 mg. pellets, three 150 mg. pellets or six or eight 50 mg. pellets for the most economical and most satisfactory effects? Certainly, overlapping of pellet surfaces reduces the total surface exposed and the amount absorbed per day. Also larger pellets are more likely to fragment, crush and give irregular waves of hasty absorption. Further, the larger pellets require a longer incision and a pocket formation, while smaller pellets are readily inserted without the formation of a scar through a trocar (to be described later). By this method, the small pellets are "strung out" end to end without overlapping and are less likely to fragment, assuring longest possible life with greater efficiency. The surface area of eight 50 mg. pellets is thus greater than four 200 mg. pellets, and probably remains proportionately greater as time and absorption proceeds.

IMPLANTATION METHODS

We chose the posterior axillary line, at about the level of the sixth to the ninth rib. We felt that there was little subcutaneous fat at this site, a likelihood of less trauma, little interference with motion and probably a minimal and uniform effect of muscular and bodily activity.

For the implantation of the larger pellets (150 and 200 mg.) an incision about $\frac{3}{4}$ inch (2 cm.) in length was made under procaine hydrochloride anesthesia and

nevertheless. The sutures were not removed until the seventh day.

For the 50 mg. pellets a trocar was specially constructed so that the diameter of the pellets was that of the trocar. After injection of procaine hydrochloride a minute cutaneous puncture or incision was made (about

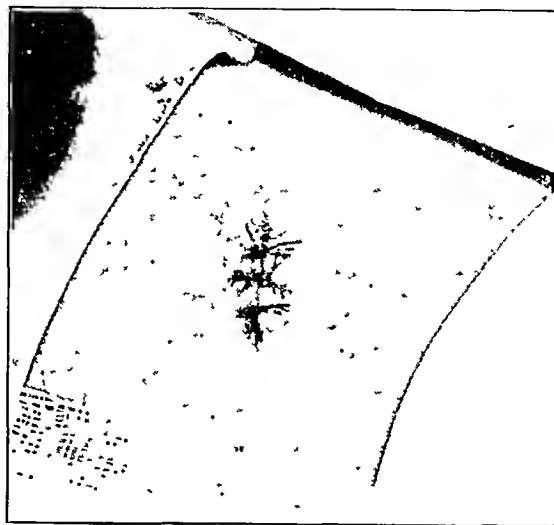


Fig. 49—Step 5 in implantation technic

$\frac{1}{4}$ inch [0.64 cm.]) with a sharp pointed scalpel. This facilitated the introduction of the trocar. It was then slowly pushed forward under the skin and the stilet withdrawn. Three or four pellets were then slipped into the hollow and held in place with a plunger, while the trocar cuff was withdrawn and the process repeated at another site, the work being done through the one original puncture wound. By this method the pellets remained in a fixed position end to end as inserted, and with less trauma or bleeding. The puncture wound was closed with one suture to insure prevention of the pellets working their way up and out. Repeated implantations could be made at the same site if desired.

ADVERSE RESULTS AND OBSERVATIONS

Of the total of seventy implantations two were terminated spontaneously at the end of the second and third week by failure of the incision wound to heal with resultant ejection of the pellets. In these instances, both among the earlier implants, the sutures were removed on the fifth day. Also, the pocket formation was so small that the pellets lay too near the incision and were too superficial. After the technic was modified this has failed to recur. There has been no excessive bleeding and no infection. There has been no pain, not even discomfort. The ejection has not occurred with the smaller (50 mg.) pellets inserted with the trocar.

The lack of response, as described, probably due to encapsulation, must necessarily be considered as an adverse result. Several other instances of decreased or partial response did present themselves, probably explainable on the basis of a decrease in absorption due to peri-tablet reaction, or inadequate dosage. That the latter was usually the cause was demonstrated by increased response following reimplantation of larger doses.

In two instances the response seemed exaggerated or excessive, although neither could be classified as severe. These were characterized by excessive libido and erec-

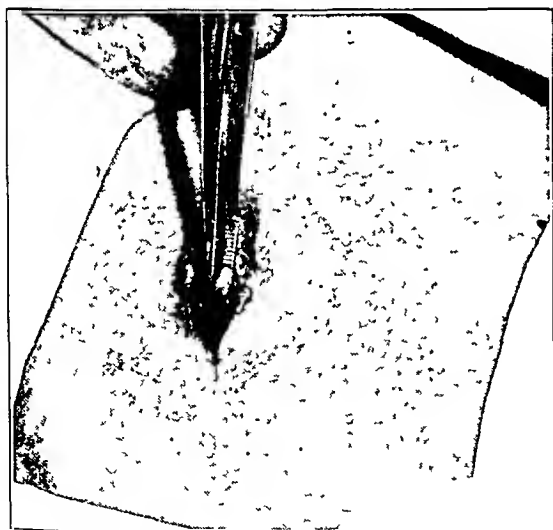


Fig. 48—Step 4 in implantation technic

by blunt dissection a pocket about 1 or 2 inches in diameter was made below and away from the incision. Into this pocket the pellets were inserted, and the incision was closed with two or three sutures. Although care was taken to insert the pellets without overlapping, they undoubtedly frequently "bunched" themselves,

tions and soon disappeared. On reimplanting these patients we used smaller doses, and the response was then considered good and normal.

There have been no unsightly scars, even when reimplantation was performed through the original site. Of course with the trocar method the scar is minimal, negligible or absent.

DURATION OF EFFECTS

The duration of the effects, as determined clinically, has varied from two months to as long as six months, with four months as the average. The shorter periods seemed to occur with pellets that were not well compressed or friable. Fragmentation of the pellets on insertion, or when in situ, would probably hasten their absorption. Of course periodic urinary determination of androgenic content would be a more objective criterion but entails added labor and expense. However, it seems to us that the clinical history and course is an excellent criterion and, if augmented by the urinary androgen determination, offers an excellent means of indication for reimplantation. As observed with injections, some patients regress so slowly that the interval between treatments may be lengthened in individual cases.

SUMMARY AND CONCLUSIONS

We feel that this series of observations justifies the following conclusions:

1. Many patients need continued testosterone therapy, but occasional patients may discontinue therapy after long-continued treatment, or at least may postpone the resumption of treatment after intervals of rest periods.

2. The implantation of pure testosterone tablets offers a means of prolonged and continued therapy which is simple and practicable.

3. Although there may be some exceptions or untoward sequelae, these are thus far so few as not to contraindicate the procedure in general.

4. Undoubtedly much further work is required to determine the best procedure, dosage, frequency and the like.

5. Following seventy implantations, no real accident or complication has occurred, suggesting the comparatively safe and benign character of the method.

6. Finally, we believe that a patient suffering a lack of androgenic substance should first be given injections of testosterone propionate to demonstrate to the patient (and physician) the effects of testosterone administration before implantation is suggested. The patient would then be able to evaluate the effects of the implants. If implants are performed as the primary treatment, the patient has no established criterion to measure the efficacy of this method.

ADDENDUM

Since the foregoing report was submitted, sixty additional implants have been performed, a total of about one hundred and thirty. These are now done with a new trocar, which has a simple beveled point and requires no incision whatever and no suture on removal. The only dressing used is a collodion dressing, removed on the seventh day. The observations and findings, as reported, hold without any modification for the entire group.

895 Park Avenue.

SPOROTRICHOSIS

REPORT OF SIX CASES AMONG FLORISTS

FRANK M. GASTINEAU, M.D.

LOUIS W. SPOLYAR, M.D.

AND

EDITH HAYNES, Ph.D.

INDIANAPOLIS

Sporotrichosis is a rather rare disease clinically seen as one of four general types, namely lymphatic, disseminated nodular, disseminated ulcerated and visceral.¹ The type commonly encountered is the lymphatic, characterized generally by an initial traumatic abscess of the skin followed by a chain of subcutaneous nodules along the course of the lymphatics in two to three weeks. These nodules are painless and later ulcerate. The

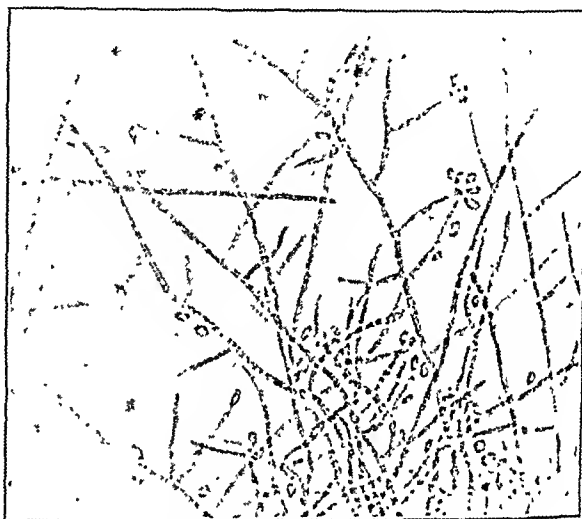


Fig. 1.—*Sporotrichum schenckii*, recovered by aspiration.

ulcers resemble tuberculosis of the skin, syphilitic gumma, staphylococcal infections or tularemia. If the condition remains undiagnosed, the course is prolonged and disabling.

The etiologic agent is the fungus *Sporotrichum schenckii*, named after Schenck, who in 1898 originally described the disease in this country. The fungus is a widespread saprophyte being found in every country. Microscopically the myceliums appear hyaline, fine branching organisms 1 to 2 microns in diameter. The spores are oval to pear shaped and are attached to short lateral branches or longer hyphae.

REPORT OF CASES

CASE 1.—G. F., a youth aged 18, a florist's assistant, was referred by his physician to our office on March 4, 1939. On January 2, he stated, he had run a small piece of steel into the middle finger of the right hand. The injury was considered trivial except that it would not heal. Prior to referral, local medications had been applied, and surgical incisions of the abscess had been performed. About the first of February he had noted a number of "boil-like" lesions ascending the right forearm.

Examination revealed that the boy was well developed and had no abnormalities except the lesion of the right forearm. About the nail of the middle finger one could see an infected

From the Indiana University Medical Center (Dr. Gastineau and Dr. Haynes).

Dr. Spolyar is Chief of the Bureau of Industrial Hygiene of the Indiana State Board of Health.

1. Templeton, H. J., and Lunsford, C. J.: *Sporotrichosis in Florists*. *Coast. Northwest Med.* 30:132-136 (March) 1931.

area. The surrounding tissue of the finger showed signs of an associated chemical dermatitis due to the previous use of topical applications. On the dorsal aspect of the same finger an ulcerated area discharging ropy pus was present. Ascending lymphangitis of the forearm and the arm was noted, with no involvement of the regional lymph glands. Cultures of material aspirated from lesions of the forearm and the arm, made on Sabouraud's medium, showed *S. schencki* within five days. Repeated efforts to find the sporothrix on direct smears were not successful. The serologic reactions, as well as the agglutination reaction for tularemia, was negative. The patient was given 15 minims (0.9 cc.) of a solution of potassium iodide three times a day, and improvement was noted in three weeks. Complete healing occurred by May 5. Three months later the lesions were still healed.

CASE 2.—D. N., a man aged 45, a florist, was first seen April 28, 1939, when he gave a history of having injured the right thumb with a splinter on March 15. A chancre developed at the site of injury which ulcerated and discharged ropy material. Typical lymphangitis involving the forearm and the arm was present. No involvement of the regional lymph glands was noted. Cultures of aspirated material showed *S. schencki* on the fifth day, whereas direct smears persistently failed to do so. The serologic reaction of the blood and the agglutination reaction for tularemia were negative. With potassium iodide therapy, the patient made an uneventful recovery in one month. There was no recurrence.

CASE 3.—A. S., a man aged 65, a florist, was first seen March 28, 1939 in consultation with his family physician. He had injured the thumb of the right hand about Dec. 25, 1938, and the injury would not heal. There was an abscess, which had been opened surgically several times before the establishment of the diagnosis.

Examination revealed an ulcerated area of the right thumb above the nail. Two such areas were present on the forearm, with concomitant lymphangitis above them. Cultures of aspirated material were positive in within six days, and repeated direct smears were negative. Syphilis and tularemia were ruled out. With potassium iodide therapy the patient made an uneventful recovery.

CASE 4.—E. H., a woman aged 55, a florist, was first seen May 8, 1939. She gave a history of having injured the left thumb in October 1938 by having it caught between the doors of a delivery truck. That same afternoon she reported three hundred plants and worked with sphagnum moss. The injury did not heal, and "some bumps" came out on the forearm. On Feb. 20, 1939 pneumonia developed, for which she was treated at the local hospital. During convalescence, lesions

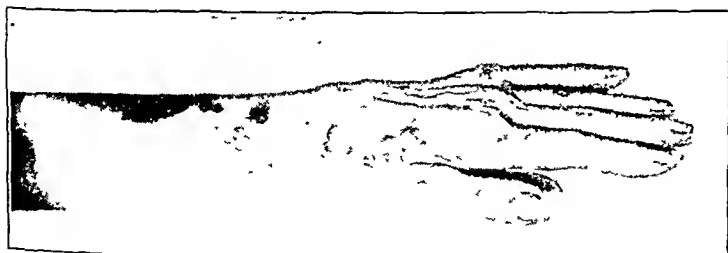


Fig. 2 (case 4).—Arm, showing ulceration

similar to those on the right arm appeared on the left arm, forearm and hand. Later, similar lesions appeared on the lower extremities.

Examination on May 5 revealed a number of nodes on the upper and lower extremities. Some areas were ulcerated, while others were in various stages of healing. Cultures were positive for *S. schencki* in seven days. Repeated cultures of the sputum showed no organisms. Syphilis and tularemia were ruled out. Recovery with potassium iodide therapy was slow;

however, with the use of unfiltered roentgen rays in doses of 75 r, healing took place rapidly. Three such doses were administered. Therapy with potassium iodide was continued for four months. There were no recurrences.

CASE 5.—H. L., a man aged 50, who worked part time in an automobile factory in addition to working in his small

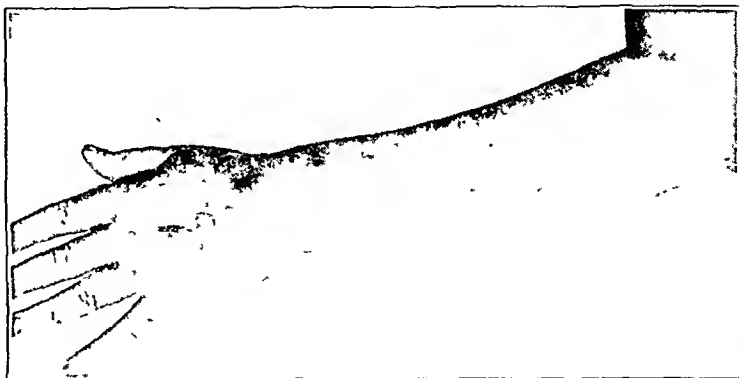


Fig. 3 (case 6).—Typical lymphangitis.

floral establishment, was first seen July 1, 1939. On May 1 he had pricked the ring finger of the left hand with a rose thorn. Within three days infection developed at the site of the injury. Lymphangitis of the forearm developed rapidly. Material aspirated from one of the nodes, cultured on Sabouraud's medium, was positive for *S. schencki* within six days. Direct smears were persistently negative. Uneventful recovery was made with potassium iodide therapy.

CASE 6.—H. L., a woman aged 40, a florist and the wife of patient 5, was first seen July 3, 1939. On May 15 she had injured the right forefinger at the base of the nail on a rose thorn. When she was first seen typical lymphangitis of the forearm had developed. Cultures of aspirated material showed *S. schencki* within five days. Syphilis and tularemia were ruled out. The patient made an uneventful recovery within a few weeks with use of a saturated solution of potassium iodide. Six months after recovery there had been no recurrence in either case 5 or case 6.

INDUSTRIAL EPIDEMIOLOGY

The foregoing cases were referred to the Bureau of Industrial Hygiene of the Indiana State Board of Health for further study. Geographically, the patients were in different sections of the state, but all were confined to central Indiana. Patients 5 and 6, husband and wife, worked in the same floral establishment. Of the 6 patients, 2 were women and 4 men, with their age distribution 18 to 65. All 6 had definite evidence of trauma. Tabulation of the raw materials and by-products used revealed that all 6 handled different fertilizers, 3 used peat moss of different brands and all used sphagnum moss, *plumosa* and flat ferns. One used home-grown carnations, and 1 grew roses. Epidemiologically, the common denominator appeared to be the sphagnum moss, the *plumosa* or the flat fern. Barberry was not handled in any instance.

Because of the work of Hopkins and Benham² it was believed that the carnation would not be a vector in this epidemic. All the infections developed between January and July 1939.

Samples of sphagnum moss, peat moss, ferns, fertilizers and carnations were sent to the United States Public Health Service and to the Indiana State Board

² Hopkins, J. G., and Benham, R. W. Sporotrichosis in New York State, New York State J. Med. 32: 595-601 (May 15) 1932.

of Health for culture. Dr. C. W. Emmons, of the division of infectious diseases of the service, cooperated in the study. In a nine month study of the material and by the use of special technics, Dr. Emmons was able to isolate *S. schencki* from 1 sample of the sphag-

TABLE 1.—Distribution of Cases of Sporotrichosis by States

State	Summary by Foerster, ³ 1924	Summary to 1940
North Dakota	26	26
Kansas	14	14
Nebraska	15	17
Illinois	6	9
Missouri	9	14
New York	..	6
Minnesota	..	3
California	..	5
Iowa	..	4
Indiana	6	6
New Jersey	..	2
South Dakota	4	4
Montana	..	1
Wisconsin	9	15
Oklahoma	11	13
Texas	5	8
Florida	..	2
Maryland	..	2
Pennsylvania	..	2
Tennessee	..	3
Maine	..	1
Colorado	..	6
Virginia	..	1
Connecticut	..	4
Alabama	..	4
Massachusetts	..	1
West Virginia	..	1
Ohio	..	1

* Does not include the 6 cases in our series.

num moss. Two patients (5 and 6) handled this particular moss in their routine duties. That they derived their infections from their contacts with this moss would be difficult to establish. Nevertheless, the organism was recovered from a suspected source.

Hopkins² stated that the sporothrix had been grown on culture experimentally from the following sources: the bark of a beech tree and a horsetail fern by Gougerot; blighted wheat by Sartory; flies, wasps and ants

TABLE 2.—Occupational Status in Reported Cases of Sporotrichosis

Occupation	Number of Cases
Farmers	46
Gardeners and nurserymen	21
Industrial workers	12
General laborers	13
Stable boys	2
Clerks	4
Florists*	3
Merchants	2
Physicians	2
Sailors	2
Soldier	1
Housewives	18
Berry picker	1
Teacher	1
Rag picker	1
Teamster	1
Druggist	1
Insurance agent	1
Chiropractor	1
Linesmen	2
Molder	1
Office worker	1
Policeman	1
Violin students	2
Minister	1
School children	5

* Does not include the 6 cases in our series.

by de Beurmann; the fur of healthy rats by Lutz and Splendore; the coats of both healthy and diseased horses by Meyer, and carnations by Hopkins, if the carnation was infected by *S. schencki* and not *Sporotrichum poae*.

Among the suspected sources of infection in some of the cases reported in the American literature have

been contact with the barberry bush in 15 cases (Foerster,³ Carter,⁴ Wakefield,⁵ Blair and Yarian⁶ and Weise⁷); contamination from rag picking in 1 (Gallegos⁸); the bite of a boa constrictor in 1 (Gray and Bamber⁹); rat bite in 1 (Anderson and Spector¹⁰); contact with a cactus plant in 1 (Lewis and Cudmore¹¹), and riding a supposedly infected horse in 1 (Beinhauer¹²; the horse later died but the cause of death was not posted).

SUMMARY OF LITERATURE

Since the description of the sporothrix by Schenck in 1898 200 cases had been reported in the United States to 1937, according to Greenburg,¹³ with 6 additional ones from 1937 to January 1940, making a total of 206. Study of the literature revealed that our series of 6 cases is the largest on record, and it becomes doubly interesting in that the epidemic was confined to florists. Of the 206 patients described in the literature, 3 were florists. Before this epidemic, 6 cases had been reported in Indiana since 1898. Table 1 indicates distribution of reported cases by states, so far as it is possible to allocate cases to a state.

That the disease is endemic in the Mississippi River basin was shown by Foerster's³ study, in 1924, wherein he was able to allocate 130 cases to this area. Ten cases which have occurred since then can be definitely added to the number in the basin area. Sixty-seven per cent of the reported cases have occurred there.

TABLE 3.—Sites of Lesions

Site	Number of Cases
Distal portion of upper extremity	130
Lungs	14
Hip	2
Leg	23
Eye	9
Neck	5
Entire body	3
Breast	1
Gastrointestinal tract	1

* Does not include the 6 cases in our series.

Sporotrichosis is primarily an occupational disease of agricultural manual workers. An occupational analysis of the cases reported for the United States is shown in table 2.

Since the disease is one affecting agricultural manual workers and tends to be disabling and chronic if not diagnosed early, the worker undergoes an economic loss out of proportion to his disease; he may also suffer a stigma due to a wrong diagnosis. Prompt diagnosis and treatment are essential.

Trauma was noted in 80 of the reported cases. Five deaths have occurred. The age distribution in 112 cases was 18 to 50 years and in 27 cases 2 to 12 years. The reported sites of the lesions are summarized in table 3.

3. Foerster, H. R.: Sporotrichosis, *Am. J. M. Sc.* 167: 54-75 (Jan.) 1924.

4. Carter, R. M.: Sporotrichosis: Report of Two Cases, *J. A. M. A.* 86: 1751-1754 (June 5) 1926.

5. Wakefield, H.: Sporotrichosis: Case Report, *Illinois M. J.* 52: 495-496 (Dec.) 1927.

6. Blair, J., and Yarian, N. C.: Two Cases of Sporotrichosis Infection Due to Barberry, *J. A. M. A.* 91: 96 (July 14) 1928.

7. Weise, E. C.: Sporotrichosis in Connecticut, with Case Report, *New England J. Med.* 205: 951-955 (Nov. 12) 1931.

8. Gallegos, P. B.: Cutaneous Sporotrichosis, with Case Report, *California & West. Med.* 26: 802 (June) 1927.

9. Gray, A. M. H., and Bamber, G. W.: Sporotrichosis with Case, *Proc. Roy. Soc. Med.* 25: 668-699 (March) 1932.

10. Anderson, N. P., and Spector, B. K.: Rat Bite Fever Associated with Sporothrix, *J. Infect. Dis.* 50: 344-349 (April) 1932.

11. Lewis, G. M., and Cudmore, J. H.: Sporotrichosis: Case Originating in New York, *Ann. Int. Med.* 1: 991-992 (Feb.) 1934.

12. Beinhauer, L. G.: Sporotrichosis, *Pennsylvania M. J.* 20: 7-7: 791 (July) 1936.

13. Greenburg, W.: Sporotrichosis: Report of Case in California, *Arch. Dermat. & Syph.* 26: 355-357 (Aug.) 1937.

SUMMARY

1. In an epidemic of sporotrichosis affecting 6 florists in central Indiana, 4 had received previous surgical treatment for primary lesions. All 6 had a history of trauma. Five had lesions of a lymphatic type, and 1 had generalized lesions. Two were husband and wife and were probably infected from a common source.

2. No other florists with sporotrichosis have been observed by us since this epidemic.

3. Industrial epidemiologic studies indicate that sphagnum moss may be the source of sporotrichosis among florists.

4. The identification of *S. schencki* in the 6 cases reported provides an example of the manner in which a governmental agency can assist physicians in private practice by doing epidemiologic studies for them.

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THE EFFECTIVENESS OF TWO NEW TYPES OF CHEMOTHERAPEUTIC AGENTS IN MALARIA

SODIUM P,P'-DIAMINODIPHENYLSULFONE N,N'-
DIDEXTROSESULFONATE (PROMIN) AND
2-SULFANILAMIDO PYRIMIDINE
(SULFADIAZINE)

L. T. COGGESHALL, M.D.

JOHN MAIER, M.D.

NEW YORK
AND

C. A. BEST, M.D.

Major, M. C., U. S. Army
ANCON, CANAL ZONE

There is need for better antimalarial drugs because of certain fundamental deficiencies in quinine and atabrine. Although both are of great importance to the person with an acute attack of malaria, neither can be relied on to remove the infection completely, and for this reason their effect on malaria from a public health standpoint probably is minimal. In actual attempts to control malaria by the use of quinine, atabrine and plasmochin, the work of Clark, Komp and Jobbins¹ stands out. They state: "Ten years of experience in attempting to control malaria in a number of endemic areas in Panama, by making monthly parasitic surveys, and treating the positives with drugs, leaves us with the impression that it is quite impossible to eradicate malaria parasites by these means or reduce them to a point where transmission is greatly reduced." In addition, not one of these drugs has a true prophylactic action. Their only action when taken in advance of the bite of an infected mosquito is the temporary suppression of a clinical attack.

The discovery that sulfanilamide would effect a complete sterilization of the virulent *Plasmodium knowlesi*

infection in rhesus monkeys² has furnished an important lead in the chemotherapy of malaria. Although cases of human malaria failed to respond to this compound, it seemed likely that a related substance might be found which would exert a similar effect in man. Such a drug could be expected materially to reduce the reservoir of infection and thereby diminish transmission of malaria by removal of carriers. Accordingly, investigations were made in an attempt to disclose a drug which would be an improvement over the accepted antimalarials or which would serve as a substitute in case their availability was curtailed. The present report describes the activity of sodium p,p'-diaminodiphenylsulfone-N,N'-didextrose sulfonate (promin)³ and 2-sulfanilamido pyrimidine (sulfadiazine),⁴ which have been found to possess considerable antimalarial activity against infections in lower animals, therapeutic malaria in patients with dementia paralytica, and acute, naturally acquired malaria of native and foreign residents of Panama.

MALARIA INFECTIONS IN LOWER ANIMALS

The acute infection produced in rhesus monkeys by *P. knowlesi* was selected as one of the test infections because of its uniform behavior, rapid course and almost invariably fatal termination. Chronic infections were obtained by treating the animals with quinine when thin smears first showed parasites.

Sulfanilamide given in doses of 1 Gm. by mouth sterilized acute infections with *P. knowlesi*.² All the parasites present in the host were killed, as proved by complete susceptibility to reinoculation with the same strain of *P. knowlesi*. Azosulfamide, sulfapyridine, sulfathiazole and sulfadiazine were also effective, although their relative efficiency was not investigated.⁵ None of these drugs had any effect on *Plasmodium cathemerium* infections in canaries, and sulfanilamide had no effect on *Plasmodium lophurae* infections in chicks.⁶ Sulfanilamide and sulfathiazole had approximately the same effect on *Plasmodium inui* and *Plasmodium cynomolgi* infections in rhesus monkeys, which was much less than the complete sterilization produced in the case of *P. knowlesi*. When given to monkeys with acute or chronic *P. cynomolgi* or *P. inui* infections, parasites disappeared temporarily from the peripheral blood. However, they reappeared after varying intervals, indicating that the infection had not been completely eradicated, although the dosages used were more than enough to sterilize *P. knowlesi* infections.

In 1937 Buttle and his associates⁶ and independently Fournau⁷ and his associates had shown that 4,4'-diaminodiphenyl sulfone was about one hundred times as active as sulfanilamide in protecting mice against hemolytic streptococci. However, it was about ten times more toxic than sulfanilamide, producing methemoglobinemia and anemia, and consequently could not be used clinically. It was found by these authors that the amino groups caused the toxicity which could be dimin-

A cooperative study from the Laboratories of the International Health Division of the Rockefeller Foundation, New York, and the Gorgas Hospital, Canal Zone, Panama

Dr. Walsh McDermott, Second Medical Division (Cornell Service), and Drs. Evan Thomas and Gertrude Wexler, Third Medical Division, Department of Syphilology, Bellevue Hospital, arranged for the cases of therapeutic malaria and their clinical supervision

Brig Gen M. C. Stayer, M. C., U. S. Army, Chief Health Officer of the Health Department, Panama Canal, Col. M. A. Dailey, M. C., U. S. Army, and Col. R. G. Harden, M. C., U. S. Army, former and present superintendents of the Gorgas Hospital, gave permission and assistance, making the clinical trial of the compounds possible. Dr. H. C. Clark, director of the Gorgas Memorial Institute, Republic of Panama, gave valuable aid and advice during the investigation.

¹ Clark, H. C., Komp, W. H. W., and Jobbins, D. M.: A Tenth Year's Observations on Malaria in Panama, with Reference to the Occurrence of Variations in the Parasite Index, During Continued Treatment with Atabrine and Plasmochin. *Am. J. Trop. Med.* 21: 191 (March) 1941.

² Coggeshall, L. T. The Cure of *Plasmodium knowlesi* Malaria in Rhesus Monkeys with Sulfanilamide, and Their Susceptibility to Reinoculation. *Am. J. Trop. Med.* 18: 715 (Nov.) 1938

³ Supplied by Parke, Davis & Co

⁴ Supplied by Lederle Laboratories, Inc.

⁵ Coggeshall, L. T., and Maier, John. Determination of the Activity of Various Drugs Against the Malaria Parasite. *J. Infect. Dis.*, to be published

⁶ Buttle, G. A. H., Stephenson, Dora; Smith, Sydney, Dewing, Tom, and Foster, G. E. Treatment of Streptococcal Infections in Mice with 4,4'-Diaminodiphenylsulfone. *Lancet* 1: 1331 (June 5) 1937.

⁷ Fournau, Ernest, Trefouël, Jacques, Nitti, Federico, Boyet, Daniel, and Trefouël, Mme Jacques. Action antistreptococcique des dérivés sulfures organiques. *Compt. rend. Acad. sc.* 204: 1763 (June 7) 1937. Fournau, Ernest, Trefouël, Jacques, Trefouël, Mme Jacques; Nitti, Federico, and Boyet, Daniel. Chimiothérapie de l'infection pneumococcique par la di(p-actylaminophenyl) sulfone. *ibid.* 205: 299, (July 26) 1937

ished by a chemical combination of other substances with these groups. The 4,4'-diacetyldiaminodiphenylsulfone was found to be almost completely inactive as a malarial compound and relatively nontoxic. This was believed to be due to slow absorption or slow conversion into the active parent substance, so that low blood concentrations were maintained over a relatively long period.

In this laboratory 4,4'-diaminodiphenylsulfone was found to be too toxic to test for activity against malaria, as a single 1 mg. dose by mouth was fatal to 2 canaries. However, the diacetyl derivative was found to exert a slight but definite effect against *P. cathemerium* infection in canaries. In two experiments 2 mg. was suspended in 0.66 cc. of water and given by mouth for six days. The effect in both was a significant prolongation of the incubation period, which indicated the necessity of further trial in other animals.

Accordingly, diacetyldiaminodiphenylsulfone was tried on *P. knowlesi* infections in rhesus monkeys. Two normal monkeys were each inoculated intraperitoneally

by heating this compound with dextrose. The water-soluble product was found to be less active and less toxic than the diacetyl derivative but was the most active soluble compound tested.

A similar derivative, the sodium salt of 4,4'-diaminodiphenylsulfone *N,N'*-didextrose sulfonate (promin), was tested against *P. cathemerium* infections in canaries without demonstrable effect. However, since the drug was known to be excreted very rapidly when given parenterally, it was considered possible that a single daily dose did not result in the maintenance of an adequate blood level. Accordingly, promin was tried in monkeys without further test on *P. cathemerium*.

Five-tenths Gm. of promin was given intravenously to a normal rhesus monkey daily for six days, beginning immediately after intraperitoneal inoculation with 100,000 *P. knowlesi* parasites. The monkey remained normal during the observation period of six weeks, after which it was successfully reinoculated with the same strain, and a typical acute infection developed.

TABLE 1—The Effect of Promin on *Vivax* and *Falciparum* Malaria

Patient	Age	Race	Type of Malaria	Duration of Acute Attack Before Treatment, Days	Treatment	Results	
						Disappearance of Fever, Days	Disappearance of Parasites, Days
1. T. W.	28	White	Vivax	4	20 Gm. 1st day 40 Gm. 2d day 15 Gm. 3d day 5 Gm. 4th day	2	1
2. F. S.	45	Negro	Vivax	3	30 Gm. 1st day 15 Gm. 2d day 15 Gm. 3d day	3	6
3. S. D.	45	Negro	Vivax	8	20 Gm. daily for 3 days	5	4
4. D. M.	50	Negro	Vivax	8	15 Gm. daily for 4 days	3	3
5. F. P.	29	Negro	Vivax	6	10 Gm. daily for 3 days	Immediate	3
6. N. K.	21	White	Vivax	1	15 Gm. daily for 3 days	2	4
7. G. K.	25	White	Vivax	1	15 Gm. daily for 3 days	6	Persisted
8. J. A.	25	White	Vivax	2	15 Gm. daily for 3 days	2	Persisted
9. R. K.	28	White	Vivax	1	15 Gm. daily for 3 days	2	5
10. R. M.	24	White	Vivax	6	15 Gm. daily for 3 days	5	Persisted
11. J. K.	23	White	Vivax	3	15 Gm. daily for 3 days	3	Persisted
12. W. S.	32	White	Vivax	12	15 Gm. daily for 3 days	1	2
13. J. S.	32	White	Falciparum	14	30 Gm. daily for 3 days	Immediate	Rings 26 hours; gametocytes 10 days
14. J. M.	21	Negro	Falciparum	6	15 Gm. daily for 3 days	Immediate	2
15. O. S.	39	Negro	Falciparum	2	15 Gm. daily for 4 days	2	2
16. J. R.	55	Negro	Falciparum	5	20 Gm. daily for 4 days	3	2
17. H. H.	20	Negro	Falciparum	4	15 Gm. daily for 4 days	2	2

with 100,000 *P. knowlesi* parasites. Immediately after inoculation 1 was given by stomach tube 0.3 Gm. of diacetyldiaminodiphenylsulfone suspended in water. The dose was repeated daily for six days. The other monkey was untreated as a control. The control monkey first showed parasites in thin smear on the fifth day and died four days later. The treated monkey remained normal during a six week period of observation. When reinoculated, a typical acute infection developed, proving that the inoculation had been protected completely against the original infection and a latent submicroscopic infection had not developed. This experiment was repeated with the same result. The complete protection against infection obtained with this drug is equal to that observed with sulfanilamide and its derivatives and is much greater than the protection afforded by quinine or atabrine.

Buttle and his associates⁵ also reported the properties of a derivative of 4,4'-diaminodiphenylsulfone obtained

⁵ Buttle, G. A. H.; Dewing, Tom; Foster, G. E.; Gray, W. H.; Smith, Sydney, and Stephenson, Doris: Action of Substances Allied to 4,4'-Diaminodiphenylsulfone in Streptococcal and Other Infections in Mice, *Biochem J.* 32: 1101 (July) 1938.

Two normal rhesus monkeys were then inoculated intraperitoneally with an indefinite number (100,000 to 500,000) of *P. knowlesi* parasites. Promin was given to each animal beginning on the third and fifth day, respectively, after parasites were found in thin blood films. One animal was given 1 Gm. daily for two successive days. The parasite count dropped to a submicroscopic level for one week, at the end of which time the animal had a relapse. Two further doses of 2 Gm. were given, which converted the infection into a chronic one. The second monkey was given 2 Gm. of promin intraperitoneally on two successive days; the parasites rapidly disappeared from the blood and failed to reappear for several months, behavior indicative of a complete sterilization of the infection. This result is equal to that achieved with diacetyldiaminodiphenylsulfone or with sulfanilamide and its derivatives. The failure to eradicate the infection in the first monkey is attributable to the low initial dose employed. It should be pointed out that 1 Gm. of promin contains only about 0.31 Gm. of active agent, the remainder of the molecule consisting of the inactive dextrose-sulfonate radical.

One and five-tenths Gm. of promin was given intraperitoneally on four successive days to a rhesus monkey with an acute *P. inui* infection. Parasites disappeared from the peripheral blood but recurred one month later. One Gm. of promin was given intraperitoneally on three successive days to a rhesus monkey with an acute *P. cynomolgi* infection. Parasites disappeared rapidly from the peripheral blood, and after three months' observation the animal has not shown a parasitic relapse. It is of interest that the asexual forms of the parasite disappeared first; those remaining the last four days of the infection were all gametocytes. These were demonstrably affected by the drug, having a hyaline, ragged, vacuolated appearance indicative of degeneration. Blood subinoculated into a normal monkey at this time failed to produce an infection.

The possibility of a specific prophylactic effect of promin against the sporozoites of *P. cynomolgi* was investigated. Three normal rhesus monkeys were given 1 Gm. of promin intraperitoneally on two successive days. Immediately after the second dose the 3 treated animals and 3 untreated controls were each inoculated intravenously with 1 cc. of a suspension of sixteen infected *Anopheles quadrimaculatus* mosquitoes ground in saline solution, an excessive amount of infective material when compared to the bite of an infected mosquito. All 6 monkeys became infected, parasites being found on the eleventh or twelfth day in all cases, so that no specific prophylactic effect existed under the conditions of this experiment.

In summary, it may be said, 4,4'-diacetyldiaminodiphenylsulfone is as effective against *P. knowlesi* infections as are sulfanilamide and its derivatives. In addition, it has a slight but definite effect on *P. cathemerium* infections in canaries. Promin is as effective as sulfanilamide or its derivatives against *P. knowlesi*, *P. cynomolgi* and *P. inui* infections in rhesus monkeys. No effect on *P. cathemerium* infections in canaries could be demonstrated by the methods used. However, it is possible that the single-dose method of administration, which was used of necessity, and the rapidity of excretion resulted in blood levels of the drug for an insufficient period of time.

ACTION OF PROMIN ON THERAPEUTIC MALARIA IN PATIENTS WITH DEMENTIA PARALYTICA

The promising results obtained on the malaria infections of lower animals indicated the desirability of testing the drug in human beings with active malaria. Toomey and Roach⁹ had already given promin intravenously to 154 patients with streptococcal infections and found that untoward reactions were less frequent than with sulfanilamide or sulfapyridine. Thus, with the assurance that the drug could be safely administered, 5 patients with dementia paralytica undergoing malaria therapy were treated at Bellevue Hospital. Treatment was initiated in the first patient, J. B., on the seventeenth day following his inoculation with blood infected with *Plasmodium vivax*. At this time he had experienced five paroxysms; the peaks of the fever were rising and had reached 106.5 F. the day before the drug was administered. The dosage of promin was 5 Gm. twice a day for three days given intravenously. A definite

effect was noted in that the temperature remained within normal limits for three days. There was a reduction in the parasite count but never a complete disappearance of parasites. On the fourth day the temperature was 102 F., and the following day a tertian type of fever was resumed. No further treatment was tried. The next 4 patients likewise had dementia

paralytica with active vivax malaria which was treated after they had had ten paroxysms. Each of these patients was also given 10 Gm. of promin daily for three days. Their fever disappeared within forty-eight hours and their blood smears became negative at about the same time.

There was no recurrence of clinical symptoms or parasites for six days, at which time they received quinine in accordance with the hospital routine. Since most strains of therapeutic malaria are easily influenced by antimalarial drugs and tend to terminate spontaneously, no predictions could be made on the probable behavior of the drug against naturally acquired infections. Also conclusions as to whether the infections were permanently interrupted were unwarranted because of the low rate of relapse associated with blood-induced therapeutic malaria. From these observations it was possible to draw only one important conclusion, namely that the drug possessed definite antimalarial activity against induced vivax malaria.

THE EFFECT OF PROMIN ON NATURALLY ACQUIRED MALARIA

The positive effect of the drug on the malaria infections of patients with dementia paralytica indicated the necessity of a trial against naturally acquired infections, particularly in the acute stages of the disease. An opportunity was provided at the Gorgas Hospital, where 17 patients were treated. The group comprised 8 native Negroes and 9 white residents who had arrived within the past year and were suffering with either vivax or falciparum malaria. The details of the infections, treatment and results are summarized in table 1.

The vivax infections before treatment were equally severe in white and Negro patients. The majority gave a previous malaria history, although it was not always possible to state whether the present attack was a primary one or a recurrence. The duration of the acute attack preceding the administration of the drug ranged from twenty-four hours to twelve days, which eliminated the possibility of a spontaneous remission. It was interesting to note that 5 of the white patients were on a prophylactic routine of 1 Gm. of quinine a day for five days, a rest period of seven days and this procedure repeated, despite which they became acutely ill with malaria. All patients had demonstrable

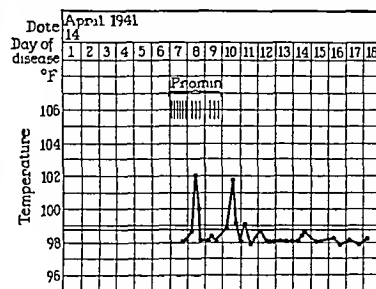


Chart 2 (patient 2, table 1).—Clinical course of F. S., a Negro with a diagnosis of vivax malaria.

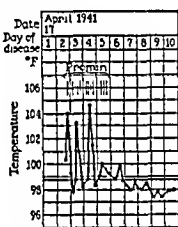


Chart 1 (patient 3, table 1).—Clinical course of S. D., a Negro with a diagnosis of vivax malaria.

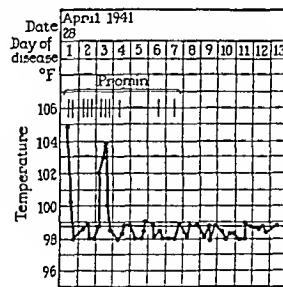


Chart 3 (patient 9, table 1).—Clinical course of R. K., a white man with a diagnosis of vivax malaria.

9. Toomey, J. A., and Roach, F. E.: Promin in the Treatment of Some Acute Infections, *J. Pediatrics* 18: 1 (Jan.) 1941.

circulating parasites at the onset of promin therapy. The dosage of the drug varied between 10 Gm. and 40 Gm. a day, given intravenously, for not more than four days.

The results of the test therapy showed that under this arbitrary dosage the 4 Negro patients responded favorably. There was usually one paroxysm following

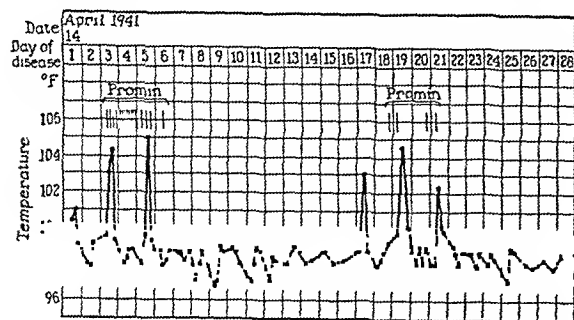


Chart 4 (patient 1, table 1)—Clinical course of F. W., a white man with a diagnosis of vivax malaria

the beginning of therapy, or two paroxysms if the fever was of the quotidian type (chart 1). The febrile reaction of F. P., who received the smallest amount of drug given to any patient, 10 Gm. daily for three days, was halted, but the parasites persisted and there was a reactivation of the clinical course. The remaining 3 patients, S. D., D. M. and F. S., made a complete clinical recovery, and thick films were still negative one month after treatment.

The vivax infections of the 8 white persons were more resistant to the effect of promin. Patient R. K. was clinically cured and his blood smears had remained parasite free when last examined one month after treatment (chart 3). Six showed clinical improvement, and although the parasite count was definitely reduced an occasional parasite could be detected in the thick smear. These patients were finally treated with quinine and were released from the hospital. The remaining patient, F. W., responded after the initial treatment, but on alternate days, coinciding with the initial periodicity of his paroxysms, his temperature rose to 99 F. and his blood smear was occasionally positive. On the fourteenth day following treatment an exacerbation of symptoms was experienced. He was given two 10 Gm. doses of the drug, each about three hours before the

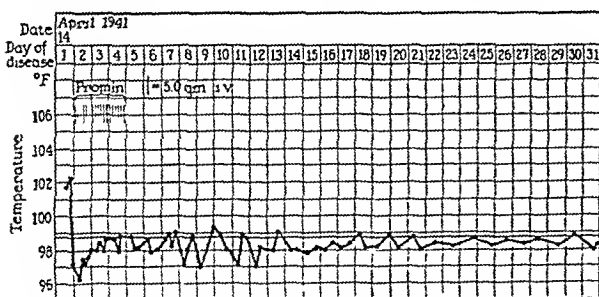


Chart 5 (patient 13, table 1)—Clinical course of J. S., a white man with a diagnosis of falciparum malaria

expected chill. This time there was a complete clinical recovery, and the blood smears were still negative one month later (chart 4).

There were 5 patients with severe falciparum malaria in the series, all but 1 of whom were Negroes. The dosage of promin was essentially the same as that given to patients with vivax malaria (table 1). Two of the 5 patients, J. S. and J. M., were treated during a period of

normal temperature, and the fever did not recur (chart 5). The 1 white patient was acutely ill and slightly icteric on admission. His red cell count was 2,700,000 with a hemoglobin content of 55 per cent. The smear showed many falciparum rings and an occasional gametocyte. Following the onset of treatment the rings disappeared within thirty-six hours, but the gametocytes increased in numbers and persisted for fourteen days. However, it was evident that they were being affected by the drug. They stained poorly. Many had a hyaline appearance and were vacuolated and definitely disintegrated.

Toxic reactions to the drug were minimal. Three patients complained of nausea during the actual administration of the drug, but this symptom disappeared shortly and did not reappear when subsequent injections were made. Two patients showed a moderate degree of cyanosis which disappeared when the drug was discontinued.

The concentration of promin in the blood of a few patients was measured by Mr. Jacob of the board of health laboratory, according to the method of Marshall.¹⁰ Although the number of analyses was small, the results showed that the blood level was extremely

TABLE 2—The Effect of Sulfadiazine on Acute Human Malaria

Patient	Age	Type of Malaria	Duration of Acute Attack Before Treatment, Days	Results	
				Disappearance of Fever, Days	Disappearance of Parasites, Days
1. R. N.	36	Vivax	1	2	2
2. T. A.	42	Vivax	4	3	2
3. P. A.	23	Vivax	3	2	2
4. P. G.	22	Vivax	18	3	4
5. R. J. F.	21	Vivax	3	1/2	2
6. A. H.	38	Vivax	4	3	5
7. R. J.	41	Vivax	5	No effect	No effect
8. R. L.	38	Falciparum	5	3	1
9. B. A.	32	Falciparum	5	1	2
10. P. E.	40	Falciparum	5	1	2
11. M. M.	20	Falciparum	1	No effect	No effect
12. M. C.	33	Falciparum	1	No effect	No effect
13. S. F.	22	Quartan	7	2	2

high shortly after the intravenous injection of the drug and fell rapidly to low levels within a relatively short interval.

The results indicated that promin, given in the amounts and under the conditions described, had a definite action on naturally acquired vivax and falciparum malaria. Vivax infections seemed to be more resistant to the effects of promin than falciparum malaria. Both vivax and falciparum infections in the native Negro residents seemed to be more responsive to the treatment than did the same infections in the relatively nonimmune white patients.

THE EFFECT OF SULFADIAZINE ON MALARIA

Although sulfanilamide has been tried on numerous occasions for the treatment of malaria with an occasional favorable report, most investigators feel that its effect on this infection is negligible. In our own experience with 31 cases of vivax malaria in patients with dementia paralytica it was found that even massive doses were practically without effect.² However, since it is known that various bacterial infections react differently toward related sulfanilamide derivatives, it seemed worth while to try others on malaria infections. Sulfadiazine was selected for two reasons: first, because certain closely related compounds were found to possess plasmodicidal activity in avian malaria, but their toxicity

¹⁰ Marshall, E. K. Jr.: The Determination of Sulfadiazine in Blood and Urine, *J. Biol. Chem.* 122:263 (Dec) 1937.

precluded clinical trial; second, because sulfadiazine itself was found to be extremely nontoxic and safe for human administration.¹¹

Accordingly it was tried in 13 cases of acute malaria in Negro patients, 7 vivax infections, 5 falciparum and 1 quartan. The dosage was the same for all patients, 6 Gm. the first day and 4 Gm. daily for the next five days, given by mouth at four hour intervals during the day. The results are summarized in table 2, in which it can be seen that sulfadiazine exerted a very definite influence against all three types of human malaria. In 2 patients with vivax infections, R. J. and M. M., and 1 with falciparum infection, M. C., this amount of the drug was unable to check the infection. There were no toxic reactions to the drug except in patient S. F., who seemed to respond with fever that promptly subsided on withdrawal of the drug.

COMMENT

It is impossible to state with certainty whether patients have been cured after recovery from their acute attack of malaria following the use of promin or sulfadiazine. There are several authenticated instances in which blood donors have transmitted malaria to recipients as long as twenty-five years after their initial attack. During the interim these donors had lived in nonmalarial areas and were symptom free. The absence of parasites in the blood smears of chronic human infections has no meaning, and it is not possible to subincubate infected tissue into lower animals for diagnostic purposes as there are no known susceptible ones. Since all patients were discharged and returned to infected territory, any subsequent attacks could as well be new infections as relapses.

In the present study no attempt was made to determine the most efficient dosage of promin because the necessity of intravenous administration limited its usefulness. The results obtained showed that patients responded best when the maximum concentration of the drug was present in the blood at the time of, or shortly before, the sporulation of the parasite. This is in agreement with the finding that, irrespective of the amount given, the drug is excreted extremely rapidly. It seems likely that all the patients would have responded in a satisfactory manner if the drug had been given over a longer period of time, with each dose preceding or immediately following each expected paroxysm.

No explanation was found for the variation in the response of different species of malaria parasites to sulfonamide drugs. It is possible that the effect of sulfanilamide may be correlated with virulence of the infecting organism. *P. knowlesi*, the most virulent of the experimental malaria parasites, is more readily inhibited by sulfanilamide than are less virulent species, just as virulent strains of streptococci are inhibited by concentrations of sulfanilamide which do not affect less virulent strains. Accordingly various chemicals which were known to be more powerful bacteriostatic agents than sulfanilamide were tested against experimental malarias. It was believed that a drug which produced a demonstrable effect on less virulent species of plasmodia would prove to be more actively plasmodicidal than sulfanilamide and hence might be expected to affect human malaria. The results of the study seem to justify this belief and support the assumption that the greatest effect is against the most virulent infections. The most severe malaria infection in man is produced

by *P. falciparum*, and although there were few cases it responded more readily to promin than the less virulent vivax infections.

SUMMARY AND CONCLUSIONS

Seventeen patients acutely ill with vivax and falciparum malaria were treated with sodium p,p'-diaminodiphenylsulfone N,N'-didextrose sulfonate (promin). The results revealed a definite effect on naturally acquired human malaria infections. The vivax infections were more resistant to therapy than the falciparum. The infections in the native Negro residents were more responsive to the drug than the same infections in the relatively nonimmune white patients.

Thirteen patients with vivax, falciparum and quartan malaria were treated with 2-sulfanilamido pyrimidine (sulfadiazine). There was a demonstrable effect in 10 cases but none in 3. Although the effect of this drug was definite, it appeared to be less active than promin when given under the conditions described.

From the observations cited, it seems apparent that there is ample evidence to show that these new types of compounds, unrelated to quinine or atabrine, possess considerable activity against experimental and human malaria and, with related compounds, justify further study.

It should be emphasized that at present there are no reasons for giving the drugs in preference to quinine or atabrine for the treatment of malaria, and they should be regarded only as important substitutes.

49 West Forty-Ninth Street.

LOCAL SULFONAMIDE THERAPY IN ACUTE MASTOIDITIS

GEORGE S. LIVINGSTON, M.D.

CHICAGO

The local use of sulfanilamide and its related compounds is increasing rapidly, as indicated by numerous reports in the recent literature. Jensen, Johnsrud and Nelson¹ implanted sulfanilamide crystals in 39 cases of compound fracture and 2 compound dislocations after careful débridement and hemostasis, followed by primary closure of the skin, with no primary wound infection. In 94 similarly treated cases, but without sulfanilamide, 27 per cent showed infection. Key and Burford² had a similar experience with compound fractures. They noted also that experimentally produced fractures in rabbits treated locally with sulfanilamide showed as rapid wound and bone healing as those in which the drug was not used. Campbell and Smith³ treated 54 compound fractures, using sulfanilamide both locally and by mouth. Mueller⁴ used it in the peritoneal cavity in 55 cases of abscess and peritonitis following ruptured appendixes, with no mortality. Many other reports have appeared showing good results in the prevention or cure of infections by the local use of sulfanilamide. All stress the prompt

From the Department of Otolaryngology, Children's Memorial Hospital.

Ampules of sterile sulfathiazole were kindly supplied by Eli Lilly & Co., Indianapolis.

1. Jensen, N. K.; Johnsrud, L. W., and Nelson, M. C.: Local Implantation of Sulfanilamide in Compound Fractures: Preliminary Report, *Surgery* 6:1 (July) 1939.

2. Key, J. A., and Burford, T. H.: Local Implantation of Sulfanilamide in Compound Fractures: Its Effect on Healing, *South. M. J.* 33: 449 (May) 1940.

3. Campbell, W. C., and Smith, Hugh: Sulfanilamide and Internal Fixation in Treatment of Compound Fractures, *J. Bone & Joint Surg.* 22:959 (Oct) 1940.

4. Mueller, R. S.: Use of Powdered Crystalline Sulfanilamide in Surgery, *J. A. M. A.* 116:329 (Jan. 25) 1941.

11. Finland, Maxwell; Strauss, Elias, and Peterson, O. L.: Sulfadiazine: Therapeutic Evaluation and Toxic Effects on Four Hundred and Forty-Six Patients, *J. A. M. A.* 116:2641 (June 14) 1941.

healing and the absence of irritation or other adverse tissue reactions. No reports to the present date have dealt with this method in the treatment of mastoid infections, although Osgood⁵ suggests it in a recent paper.

All the material of the present report consists of cases of acute mastoiditis in children treated since Jan. 1, 1941. Prior to this date the surgical treatment of such cases had consisted of the usual thorough extirpation of all accessible pneumatic cells and necrotic tissue, followed by suture closure with a rubber tube drain from the antrum, emerging from the wound at its lower end. The postoperative course of purulent drainage varied between three and six weeks in most cases. Some drained considerably longer. Occasionally a necrotic broken down wound was encountered which required treatment by the open method with subsequent closure.

In the present series, the first group of cases, attended between January 1 and April 1, was treated as before, with the exception that sulfanilamide crystals were placed in the mastoid cavity before closure. The amount varied from 1 to 3 Gm., depending on the size of the cavity. The usual rubber tube drain was used as before. The subsequent course was disappointing. Purulent drainage ensued as before, and the average postoperative period until complete healing occurred was about the same as if no sulfanilamide had been used. No detailed account of these cases need be given, as they were in no way remarkable. In the second group, comprising all the cases attended after April 1, operation was done in the usual way. The cavity was then filled with crystals of sulfanilamide in some and with crystals of sulfathiazole in others. The wound in each case was sutured tightly without drainage.

REPORT OF CASES

CASE 1.—A. M., a 6 year old boy, was admitted April 10, 1941 with a history that indicated right acute otitis media of four weeks' duration following measles. Mastoid swelling had been present three weeks. The ear did not drain at any time. Examination showed a large fluctuant subperiosteal abscess of the right mastoid. The tympanic membrane was thickened, slightly full and dusky red. The temperature was normal. The leukocyte count was 17,600, with 82 per cent polymorphonuclears. On April 11 mastoidectomy was done, the abscess was evacuated and extensive cellular necrosis was encountered. The mastoid cavity was filled with 2 Gm. of sulfanilamide and the wound was sutured without drainage. On the following day the blood sulfanilamide level was 0.8 mg. per hundred cubic centimeters. Mastoid culture showed *Streptococcus hemolyticus*. At this time sulfanilamide was started by mouth at a dosage of 60 grains (4 Gm.) daily in six divided doses and was continued for five days. On April 14 the blood level was 5.6 mg. per hundred cubic centimeters. The wound at this time was clean and healthy, and it was remarkable for the absence of soft tissue reaction. There was a scanty amount of bloody drainage from the incision. The ear remained dry. The leukocytes numbered 8,400, with 64 per cent polymorphonuclears. Sutures were removed on April 16, when the wound was found to be completely and solidly healed.

CASE 2.—C. S., a 15 month old girl, was admitted on May 6, 1941 with a history of cervical adenitis and fever that began three weeks earlier. The date of onset of otitis media was not known. Three days before admission, swelling appeared behind the right ear. Examination showed a large fluctuant swelling over the right mastoid, temporal and zygomatic regions. The drum membrane was inflamed and bulging. There was no drainage from the ear. The temperature was

102.8 F. The leukocytes numbered 14,100. Sulfanilamide was started by mouth, 30 grains (2 Gm.) daily, in six divided doses. The following day at operation a large abscess was evacuated. The mastoid was cellular, moderately broken down and filled with pus and granulations. The dura of the middle fossa was found exposed and covered with granulations. Sulfanilamide 1 Gm. was placed in the cavity, and the wound was sutured without drainage. Culture revealed *Streptococcus hemolyticus*. For the next eleven days the course was afebrile, with gradual diminution of swelling, and a clean wound which healed by primary union. On May 12 the leukocyte count was 6,200. At this time sulfanilamide was reduced to 20 grains (1.3 Gm.) daily and was stopped on May 16. On May 18 the temperature rose to 101.2 F., the leukocytes increased to 16,450 and the mastoid became swollen. On the following day the wound opened at one point and drained a clear, serous fluid. Sulfanilamide was again given by mouth, 20 grains daily. The temperature returned to normal. Drainage ceased May 24, when sulfanilamide was stopped. On June 7 there was again scanty serous drainage but no fever. Thereafter the wound remained dry and firmly healed.

CASE 3.—L. S., a 3 year old boy, admitted on May 9, 1941, had had scarlet fever a month previously followed by a throat abscess, which was incised and drained. After seeming well for ten days he complained of left earache on May 5 and had a temperature of 103 F. The pain and fever persisted. There was tympanic rupture on May 8. On the morning of admission he had a generalized convulsion with weakness of the right arm and leg. The left ear was draining freely. The left mastoid was moderately tender. The boy was very irritable. The temperature was 102.2 F. The leukocyte count was 9,000. Sulfanilamide was started, 30 grains daily in six divided doses. Spinal puncture yielded clear fluid under increased pressure with 17 cells, Pandey negative and sugar 87 mg. per hundred cubic centimeters. The smear and culture were negative. Ear culture showed *Streptococcus hemolyticus* and *Staphylococcus albus hemolyticus*. On the following day sulfathiazole 23 grains (1.5 Gm.) daily was added to the sulfanilamide dosage. The temperature ranged between 99 and 104 F. Pain and irritability had disappeared. The ear continued to drain and the mastoid remained tender. The daily peak of fever did not exceed 101.6 F. On May 12 sulfanilamide was stopped, and sulfathiazole was increased to 35 grains (2.3 Gm.) daily. On May 14 swelling of the mastoid was first noted. On May 15 sulfathiazole was stopped and operation was done on the left mastoid. A subperiosteal abscess was evacuated. The mastoid was cellular, with early softening and considerable pus under pressure. The sigmoid sinus plate was found dehiscent by necrosis, and the sinus wall was white, thickened and bathed in pus. The cavity was filled with sulfathiazole 4 Gm. and the wound was sutured without drainage. Culture of the mastoid yielded *Streptococcus hemolyticus*. The postoperative temperature ranged from normal to 101.6 F. for two days, then remained normal for four days, then rose to 100.6 F. on May 20, 101.4 F. on May 21, 102 F. on May 22, 100.8 F. on May 23 and remained normal continuously thereafter. On the day after operation the dressings were found soaked with a serosanguineous discharge. The wound appeared clean and healthy. Drainage was from the wound and ear. It was thin, clear and slightly blood tinged. This drainage diminished gradually and ceased on the fifth day, when the sutures were removed. Sulfanilamide 30 grains daily was given during the febrile period from May 20 to May 22. The patient was discharged on May 24 with the wound completely healed and dry, the ear dry and the temperature normal.

CASE 4.—J. P., a 4 year old girl, was admitted on May 22, 1941 with a history of measles and pain in the left ear ten weeks earlier. There was no drainage, and the pain subsided in a few days. A month later pain in the left ear recurred, with spontaneous rupture, followed by continuous drainage until admission. Examination showed a profuse purulent discharge from the left ear and tenderness over the mastoid, with periosteal thickening. The temperature was normal. The leukocyte count was 15,600. Sulfathiazole was given on the first day but was stopped on the following day, when ear

5. Osgood, E. E.: Chemotherapy, Arch. Otolaryng. 33: 961 (June) 1941.

culture showed *Streptococcus hemolyticus*. Sulfanilamide was given 30 grains daily in six divided doses until June 7. On May 24 the temperature rose to 101 F.; on May 25 it was 100.2 F., on May 26 it was 101. Mastoid operation on May 26 disclosed a cortical fistula and nearly complete necrosis of all cells. The sigmoid sinus and dura of the middle fossa were found exposed and covered by thick granulations. Sulfanilamide 2 Gm. was placed in the cavity, and the wound was sutured without drainage. The entire postoperative course was afebrile. At dressing on the first day a large amount of thin, bloody fluid was found oozing through the incision and from the ear canal. This diminished rapidly and was practically dry on May 30. Sutures were removed on the next day, when the wound was seen to be dry and firmly healed. Scanty serous drainage from the ear continued until June 10. There has been none since.

CASE 5.—J. G., a 6 year old girl, admitted on May 22, 1941, had had measles two months previously, followed by chicken-pox two weeks later, when bilateral earache appeared, with spontaneous rupture. The left ear drained for three weeks; the right continued until admission. Right mastoid swelling appeared on May 21. Examination revealed profuse purulent drainage from the right ear and slight swelling over the right mastoid. The temperature was 101.2 F. The leukocytes numbered 14,900. Sulfathiazole was started but was changed to sulfanilamide 50 grains (3.25 Gm.) daily, when on the following day culture showed *Streptococcus hemolyticus*. The temperature became normal. Operation on the right mastoid on May 26 disclosed a subperiosteal abscess, extensive cellular necrosis and a perisinal abscess. Sulfanilamide 2 Gm. was placed in the cavity, and the wound was sutured without drainage. Mastoid culture yielded *Streptococcus hemolyticus*. On the first postoperative day the dressings were soaked with a large amount of blood tinged serous fluid. This came from both the wound and the ear. The mastoid was greatly swollen by a large hematoma. The swelling and drainage diminished progressively. The sutures were removed on May 31. At this time the temperature rose to 102.3 F. and a generalized eruption was seen. Since this was recognized as a toxic drug reaction, sulfanilamide was stopped. The temperature was normal the next day. On June 4 the wound was dry and healed, and all swelling had disappeared. There was no discharge from the ear.

CASE 6.—B. K., a 6 year old boy, was admitted on May 24, 1941 with a history of a discharge from the right ear for three weeks and a mastoid swelling for ten days. Examination showed a fluctuant, tender swelling over the right mastoid and profuse purulent drainage from the right ear. The temperature was normal. The leukocyte count was 15,100. At operation on May 26 a large subperiosteal abscess was evacuated and a necrotic cellular mastoid was found. Sulfanilamide 2 Gm. was placed in the cavity, and the wound was sutured without drainage. Ear and mastoid cultures showed *Streptococcus hemolyticus*. The entire course was afebrile. Sulfanilamide was given by mouth, 40 grains daily, in divided doses, beginning on May 27, for four days. There was a considerable amount of serosanguineous drainage from the wound and ear, which decreased progressively. The wound was healed and dry on May 31. There was scanty bloody discharge from the ear, which ceased two days later.

CASE 7.—A. S., a 4 year old boy, admitted May 28, 1941, had been sick for four days with a cold, fever and cervical adenitis. He had a convulsion on the day of admission. The left ear was then draining profusely. The right drum membrane was inflamed and slightly full. The temperature was 101.2 F. The leukocyte count was 12,250. Sulfanilamide was started, 40 grains daily in four divided doses. The temperature continued to rise to about 101 F. daily. Right myringotomy on May 31 yielded pus, which drained for four days. The left ear continued to drain profusely. Sulfanilamide was reduced to 30 grains daily on June 3 and was stopped on June 5. There was about 1 degree elevation of temperature from June 3 to June 7. Sulfanilamide 40 grains daily was resumed on June 7 and continued until June 14. During this

period there was no fever. Roentgenograms showed a well pneumatized, normal mastoid on the right side. The left showed extensive coalescence. Ear culture yielded *Streptococcus hemolyticus*. On June 14 the left mastoid became tender. On June 16 left mastoidectomy was done. The entire mastoid was necrotic. The cavity was filled with sulfanilamide 2.5 Gm. and the wound was sutured without drainage. Mastoid culture showed *Streptococcus hemolyticus*. On June 17 the blood sulfanilamide level was 1.5 mg. per hundred cubic centimeters. There was a great deal of serosanguineous drainage from the wound and ear, which diminished only slightly during the next ten days. During this period the patient was afebrile. On June 27 the temperature rose to 103.2 F., the mastoid became swollen and tender, and the ear discharge was frankly purulent. On the following day two fistulas appeared in the wound, draining pus. Daily sulfanilamide irrigations through the upper fistula were started according to the method described by Herrell and Brown.⁶ This consists of a suspension of 2 Gm. of sulfanilamide in 100 cc. of aqueous 0.8 per cent solution of sulfanilamide. Little if any of the crystals left the syringe, however, so one must assume that the fluid contained only 0.8 per cent of the drug. From this time on the temperature remained normal. Drainage from the wound and ear diminished slowly. The wound was healed and dry on July 18. The ear was dry two days later. This is the only case of this series in which purulent drainage occurred after operation.

CASE 8.—A. H., a 6 year old girl, who was admitted June 4, 1941, had had several attacks of bilateral acute suppurative otitis media in the past six months, which had resolved without complications. The present sickness began three weeks previously with a cold, pain in the left ear and spontaneous rupture. Mastoid swelling appeared a week later. Ear drainage stopped three days before admission. Examination showed a subperiosteal abscess over the left mastoid and zygoma. The drum membrane was red and bulging, but there was no discharge. The temperature was 100.4 F. The leukocyte count was 10,300. On June 6, at operation, a large subperiosteal abscess was drained. The mastoid was cellular and extensively necrotic. Sulfanilamide 4 Gm. was placed in the cavity, and the wound was sutured without drainage. Culture showed *Streptococcus hemolyticus*. No sulfanilamide was given by mouth at any time. The sulfanilamide blood level on the day after operation was 4.7 mg. per hundred cubic centimeters. On the third day it was 0.95 mg. The entire postoperative course was afebrile. There was profuse serosanguineous drainage from the wound and ear, which diminished progressively. On June 14 all swelling had disappeared, the wound was dry and healed, and the ear had stopped draining.

CASE 9.—A. T., a 7 year old girl, admitted on June 11, 1941, had had suppuration of the right ear with scarlet fever two years previously. At that time a subperiosteal abscess had been drained without mastoidectomy. The ear has drained intermittently since. Six weeks before admission, following a cold, the ear began to drain profusely, and swelling appeared in front of the ear. This subsided in a few days but reappeared three days before admission. Examination showed a tender, nonfluctuant swelling over the right zygoma. There was scanty purulent drainage from the ear through a large central perforation of the pars tensa. The temperature was 101.2 F. The leukocyte count was 12,200. During the next two days the swelling spread to the temporal and mastoid regions and became fluctuant. At operation on June 14 a large subperiosteal mastoid and zygomatic abscess was evacuated. The bone showed advanced necrosis throughout. There was no evidence of previous mastoid surgery. No cholesteatoma was found. Sulfathiazole 3 Gm. was placed in the cavity, and the wound was sutured without drainage. Culture yielded *Streptococcus hemolyticus*. There was considerable drainage of bloody serous fluid from the wound and ear for two days. This then diminished rapidly. On June 23 the wound was healed. Scanty serous drainage continued from the ear for eight days. The entire course was afebrile.

6. Herrell, W. E., and Brown, A. E.: Local Use of Sulfamido Compounds in Treatment of Infected Wounds, *Proc. Staff Meet., Mayo Clin.* 15: 611 (Sept. 25) 1940.

CASE 10.—N. C., an 8 year old girl, admitted on June 29, 1941, had had chickenpox five weeks previously, followed by measles. The right ear ruptured spontaneously three weeks before admission. The patient then had a high fever and was given sulfathiazole for one week, when the temperature became normal, remaining so until two days before admission, when it rose to 102 F. The ear discharged profusely throughout. On admission, the right mastoid was quite tender. Roentgenograms showed a large celled mastoid with signs of early coalescence. The temperature was 102.6 F. The leukocyte count was 14,800. The temperature rose to 101 F. daily until July 2, when right mastoidectomy was done. Extensive necrosis was found. Sulfathiazole 2.5 Gm. was placed in the cavity, and the wound was sutured without drainage. Streptococcus hemolyticus and Staphylococcus aureus were found in cultures of the aural discharge. Culture of the mastoid pus showed the streptococcus alone. The temperature rose to 101.6 F. on the first postoperative day, to 100.8 F. on the second, and then returned to normal. There was moderate blood tinged serous drainage from the wound and ear. The wound was dry on the fourth day. On the seventh the temperature was 101 F. A small quantity of serous drainage issued from the lower end of the incision. The rest of the course was afebrile. The ear remained dry. The wound was dry and firmly healed two days later and has remained so.

CASE 11.—E. C., a 3½ year old boy, was admitted on July 2, 1941 with a history of pain in the left ear one week previously and spontaneous rupture on the same day. Mastoid swelling appeared four days later. Examination showed a fluctuant swelling over the left mastoid and profuse purulent aural discharge. The temperature was normal. The leukocyte count was 15,400. Sulfathiazole 30 grains daily was given from July 2 to July 4. At operation on July 4 a subperiosteal abscess was evacuated. The mastoid was small celled with scanty necrosis. The lateral sinus was found exposed 1 cm. below the knee and was covered with thick granulations. Further exposure to the normal sinus wall showed the granulations to extend 4 cm. posterior to the knee. Sulfathiazole 2 Gm. was placed in the cavity and over the exposed sinus. The wound was sutured without drainage. Cultures of pus from the ear and mastoid yielded pneumococcus type I. Since the extensive sinusal granulations did not seem compatible with an ear infection that had begun only a week earlier, the parents were questioned as to previous ear infection. It was then learned that the child had had measles in March, with left earache for a few days, but no drainage. It was assumed, therefore, that the first attack of otitis media initiated the perisinial invasion. The postoperative course was afebrile. There was scanty blood tinged serous drainage from the wound and the ear for three days. The sutures were removed on the fourth day, when the patient was discharged with the wound healed and the ear dry.

CASE 12.—M. K., a 3 year old girl, was admitted on July 2, 1941 with a history of right otorrhea for two weeks and mastoid swelling for three days. Examination showed a fluctuant swelling over the right mastoid and zygoma, and profuse purulent drainage from the ear. The temperature was normal. The leukocyte count was 14,700. Sulfathiazole was given, 30 grains daily for two days. At operation on July 4 a zygomatic mastoid abscess was drained, and moderately advanced necrosis of the cells was found. Sulfathiazole 2 Gm. was placed in the cavity, and the wound was sutured without drainage. Cultures of pus from the ear and mastoid produced Streptococcus hemolyticus. The postoperative course was afebrile. There was scanty ear and wound drainage for three days. The sutures were removed on the fourth day, when the wound was found healed and the ear dry.

CASE 13.—L. R., a 17 month old girl, was admitted on July 5, 1941 with a history of right ear discharge for two and one-half weeks. Mastoid swelling appeared two days before admission. Examination showed a fluctuant swelling over the right mastoid and profuse purulent aural discharge. The temperature was normal. The leukocytes numbered 6,100. At operation on July 7 a subperiosteal abscess was drained and necrotic cells

were exenterated. Sulfanilamide 2 Gm. was placed in the cavity, and the wound was sutured without drainage. Culture of the mastoid pus yielded Streptococcus hemolyticus. The postoperative course was afebrile. There was moderate bloody drainage from the wound and ear for three days. Sutures were removed on the fifth day, when the ear was dry. There was a 1 cm. separation of the skin margins at the middle of the wound, but no drainage. The wound was completely healed on the eighth day.

COMMENT

The foregoing histories represent all the cases of acute mastoiditis operated on to the present time, in which implantation of sulfonamide derivatives and tight closure were used. The series is small, but for the types of cases described the method has proved to be eminently successful. There has been no opportunity as yet to use this method for otogenic sepsis or otitic meningitis. Eleven of the 13 patients had subperiosteal abscess, 4 had perisinial abscess, 2 had extradural abscess and 1 had threatened intracranial invasion, as was evidenced by a convulsion and hemiparesis. The average healing time for all the patients was ten days. The shortest was four days and the longest, with two exceptions, was nine days. These were case 2, in which final healing took thirty days because of two recurrences of the serous discharge, and case 7, in which healing took thirty-one days and which was the only case in which purulent drainage occurred. In case 10 also there was a slight recurrence of serous drainage on the seventh day after having been healed for four days. All the others healed by primary union. The average healing time of the 11 successful cases was six and four-tenths days. The appearance of the wound in all the patients was remarkable for the absence of postoperative inflammatory soft tissue reaction. None showed suture suppuration. In the cases of subperiosteal abscess there was rapid progressive diminution of swelling, which usually disappeared entirely in three or four days. All the children had a moderate to profuse amount of blood tinged serous drainage from the wound and ear for one to three days, which then subsided rapidly. Only patient 7 had purulent drainage after initial healing. A dry ear resulted in every case. Eight of the patients had no postoperative fever. Patient 3 had a daily temperature rise to between 101 and 102 F. for seven days. Two others had slight fever for a day or two. The fourth febrile patient had a rise to 103.2 F. for one day on the eleventh postoperative day, coincident with a sulfanilamide rash. All the cultures showed Streptococcus hemolyticus with the exception of those of patient 10, in which pneumococcus type I was found. This patient and four others were treated locally with sulfathiazole. The rest had sulfanilamide. There was no significant difference between the two groups. Five patients received sulfanilamide by mouth after operation. Their course was in no way different from the course of those who had no peroral medication. Patient 1, in whose mastoid 2 Gm. of sulfanilamide was used, none being given by mouth before operation, had a sulfanilamide blood level of 0.8 mg. per hundred cubic centimeters on the day after surgical operation. Case 8, in which 4 Gm. of sulfanilamide was used locally but none was given by mouth, showed a blood level of 4.7 mg. per hundred cubic centimeters twenty-four hours after operation and 0.95 mg. on the third postoperative day.

The experience gained by the foregoing cases shows that it is entirely feasible to close a mastoid wound without drainage if the cavity is filled with sulfanilamide or sulfathiazole. In nearly all the cases the

wound healed in a remarkably short time and the long tedious period of dressings was eliminated. The absence of local inflammatory reaction indicates not only that there is a prompt elimination of infection but also that the drugs have no adverse effect on the tissues. Recent experimental studies further support the rationale of the local use of sulfonamide compounds. According to the hypothesis of Woods,⁷ the bacterial inhibitory action of sulfanilamide consists in its interference with the bacterial enzyme reaction involved in the utilization of para-aminobenzoic acid, a compound essential to bacterial metabolism. He has shown that para-aminobenzoic acid is a sulfanilamide inhibitor. McLeod⁸ has demonstrated the presence of sulfanilamide inhibitor in pus. This explains the frequent failure of sulfanilamide therapy in suppurative lesions, since a sufficiently high concentration of the drug to produce bacteriostasis cannot be brought by the blood stream containing the usual 5 to 10 mg. per hundred cubic centimeters. The local implantation of sulfanilamide, however, gives such a high concentration as to overcome the inhibitory action of the pus. Jensen and his colleagues¹ estimated the local concentration of sulfanilamide in compound fractures twenty-four to thirty hours after closure to be from 250 to 666 mg. per hundred cubic centimeters after implanting 5 to 10 Gm. It is generally believed that the action of sulfanilamide is solely bacteriostatic and that the natural defense mechanisms of the body effect the final elimination of infection. It is important to note, however, that sulfanilamide does not interfere with these mechanisms and may even stimulate them. King⁹ showed that in the presence of 1:1,000 sulfanilamide the granular leukocytes of rabbit blood in tissue culture migrate at a more rapid rate than in the control cultures. Finkelstein and Birkeland¹⁰ found that sulfanilamide stimulates phagocytosis and leukocytosis in the presence of fresh plasma and serum in guinea pigs. The healing of wounds was not hindered by sulfanilamide, as was demonstrated in the present study, in which prompt and firm healing was noted in nearly all the cases. Taffel and Harvey¹¹ found that sulfanilamide by mouth does not inhibit the healing of experimental stomach wounds in rats and does not reduce the tensile strength of the healed wound.

The question of which drug to use locally has not been settled by the present study. Sulfanilamide and sulfathiazole were found to be equally effective in the streptococcal cases. In the one pneumococcal case, sulfathiazole was used. If the identity of the organism is not known at the time of operation, sulfathiazole is the drug of choice. Sulfadiazine, which is reported to be effective against a larger variety of bacteria, has not been used. Future experience may favor the use of some of the more recently synthesized sulfonamide compounds.

The danger of acute toxicity is negligible. The largest amount of sulfanilamide used was 4 Gm., which completely fills a large mastoid cavity. In the smaller cavities, proportionately smaller amounts were used. With 4 Gm. implanted, the blood concentration in twenty-four hours was 4.7 mg. per hundred cubic centimeters and in seventy-two hours it had dropped to 0.95 mg.

Thus with maximum local dosage the greatest systemic concentration of the drug was less than is usually maintained by oral administration and is present for only a day or two.

Closure of a mastoid wound without drainage is not new. Reik¹² described the method which Blake advocated many years ago, which he called the blood clot method. After a very careful exenteration of the mastoid he allowed the cavity to fill with blood and sutured tightly. He reported a high percentage of wounds healed by primary union. In the experience of most otologists the method has not proved successful in a sufficiently large proportion to warrant its routine use. With the local use of sulfonamide compounds, complete closure of the mastoid has resulted in primary healing in nearly all cases.

SUMMARY

A new procedure in the surgery of acute mastoiditis consists in the local implantation of sulfanilamide or sulfathiazole crystals in the cavity and tight closure of the wound. Experience in a series of cases shows that the postoperative period is greatly shortened and that primary healing may be expected in nearly all cases.

185 North Wabash Avenue.

THE EARLY DIAGNOSIS OF ACUTE SPINAL EPIDURAL ABSCESS

REPORT OF AN ILLUSTRATIVE CASE

SAUL BOHARAS, M.D.

AND

Y. D. KOSKOFF, M.D.

PITTSBURGH

Acute spinal epidural abscess is a disease unfamiliar to most physicians. It is rarely diagnosed before the onset of irreparable damage to the spinal cord, and the true nature of the process is often discovered only at postmortem examination. We are reporting the following case to illustrate a sequence of symptoms and signs important in arriving at an early diagnosis. Prompt treatment will save the patient from lifelong disability or death.

REPORT OF CASE

I. P., a white girl aged 18, was admitted to the Montefiore Hospital July 7, 1937. The history was significant in that the patient had been operated on for acute and recurrent osteomyelitis eight times between February 1930 and December 1936. The right scapula, a rib, the left femur and the right femur had been involved. The patient was first seen on July 4, when she complained of severe pain in both loins and in the lumbar region. This pain had been constant since July 1, when a roentgenogram of the spine was found to be normal. During the eleven days prior to July 1 the patient continued to work as a stenographer, despite mild backache. Physical examination on July 1 revealed that the oral temperature was 101 F., the pulse rate 100 and the respiratory rate 15. The general physical examination gave negative results except for revealing moderate tenderness on percussion at both costovertebral angles, with slight tenderness over the lumbar and lower thoracic portions of the spine. The neurologic examination gave negative results. A voided specimen of urine contained a few pus cells, but no albumin or red cells. On July 5 and 6 pain in the back was severe, constant and unrelieved by opiates. The oral temperature fluctuated from 100 to 102.5 F. There were moderate sweating, slight chilliness, headache and nausea. The tenderness

7. Woods, D. D.: Relation of p-Aminobenzoic Acid to Mechanism of Action of Sulfanilamide, *Brit. J. Exper. Path.* **21**: 74 (April) 1940.

8. McLeod, C. M.: Inhibition of Bacteriostatic Action of Sulfonamide Drugs by Substances of Animal and Bacterial Origin, *J. Exper. Med.* **72**: 217 (Sept.) 1940.

9. King, J. T.: The Effect of Sulfanilamide on Blood Leukocytes, *Am. J. Physiol.* **123**: 119 (July) 1938.

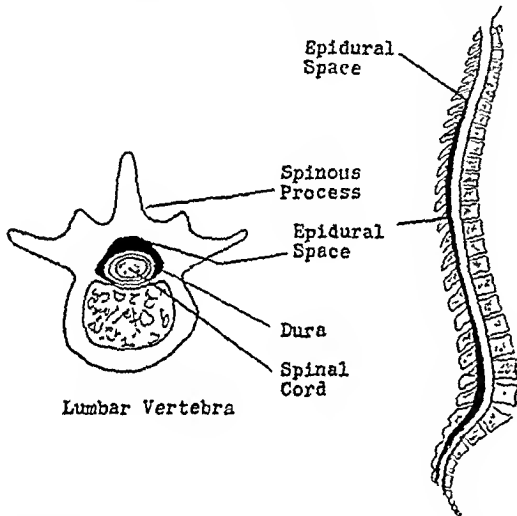
10. Finkelstein, Robert, and Birkeland, J. M.: Mode of Action of Sulfanilamide and Prontosil, *Science* **87**: 441 (May 13) 1938.

11. Taffel, Max, and Harvey, S. C.: Effect of Sulfanilamide on Wound Healing, *Proc. Soc. Exper. Biol. & Med.* **45**: 647 (Nov.) 1940.

12. Reik, H. O.: Simple Mastoidectomy by the "Blood Clot Method," in Jackson, Chevalier, and Coates, G. M.: *The Nose, Throat and Ear and Their Diseases*, Philadelphia, W. B. Saunders Company, 1929, p. 564.

From the Montefiore Hospital; Isaac Kaufmann Foundation.

increased over the lower thoracic and lumbar portions of the spine, but the maximum tenderness was at the costovertebral angles. On account of the previous history of osteomyelitis, it was felt that the diagnosis rested between a perinephric abscess or a cortical abscess of the kidney and acute osteomyelitis of a vertebra, with or without an epidural abscess. The neurologic examination again gave negative results. On July 7 at 2 p. m. the pain was severe, the temperature 103 F. and the pulse rate 110. Reexamination of the patient revealed a new condition, namely, a diminution of the left lower abdominal reflex. There was a questionable increase in the left knee jerk, but no other pathologic reflexes were obtained. There were no objective motor or sensory abnormalities. The sphincters were apparently intact, although there was a history of slight frequency of urination of a few hours' duration. On further questioning, it was found that a sense of heaviness of the legs with slight numbness of the toes had developed in the past few hours. With the development of slight but definite neurologic signs and symptoms a diagnosis of acute spinal epidural abscess was made. Spinal tap was performed at the third lumbar interspace. Complete subarachnoid block was present on compression of the jugular vein. The spinal fluid was clear and slightly xanthochromic and contained 100 mg. of protein per hundred cubic centimeters. The patient was



Relationship of the epidural space to the spine and the spinal cord (after Browder and Meyers⁴).

admitted to the hospital at 6 p. m. The leukocyte count was 12,600, and a catheterized specimen of urine was essentially normal. Because of the uncertainty of localization of the abscess, a spinal needle was carefully introduced between the eleventh and twelfth dorsal vertebrae, the site of maximum spinal tenderness. The needle was cautiously inserted to the level of the epidural space, with suction applied frequently. A drop of pus was obtained from the needle. Laminectomy was performed at 10 p. m., approximately eight hours after the detection of the abnormal neurologic signs. The spines and laminae of the vertebrae from the eleventh thoracic to the first lumbar were removed. A thin layer of granulation tissue was found at the twelfth dorsal vertebra, beneath which a considerable amount of thick, creamy pus was found. A small catheter was inserted superiorly and inferiorly for a distance of 5 cm., but no further pus was obtained. The pus yielded *Staphylococcus aureus*. No gross evidence of osteomyelitis was seen, but on the seventh postoperative day a sequestrum was removed from the wound that showed histologic evidence of chronic osteomyelitis. The postoperative course was uneventful. The patient was discharged, after a stay of twenty-seven days, with normal function and no abnormal neurologic signs. During the past four years there has been no recurrence of symptoms or signs of epidural disease.

Etiology.—The organism most frequently associated with spinal epidural abscess is *Staphylococcus aureus*. The streptococcus, *Bacillus pyocyaneus*, the typhoid

bacillus, the pneumococcus and the gonococcus have also been found in this lesion.¹

Anatomy.—In order to grasp the nature of the pathologic condition in acute epidural spinal infection, with its resultant clinical picture, an appreciation of the anatomy is important. This has been discussed fully by Dandy.² In the accompanying illustration are shown some of the essential features of the epidural space, which extends from the foramen magnum to the sacrum and lies almost entirely posterior and posterolateral to the cord. It communicates with the intervertebral foramina³ where it surrounds the nerve roots but not with the cranium, since the dura is tightly adherent to the foramen magnum.

Pathogenesis.—Infection of the spinal epidural space may occur by metastasis from a distant focus of infection, such as a furuncle, or by direct extension from an adjacent focus of infection. The infection may also follow a variety of acute infections, such as infection of the upper respiratory tract, otitis media, sore throat, acute bronchitis, pneumonia, osteomyelitis, mastoiditis, phlebitis, appendical abscess, cellulitis and puerperal sepsis.⁴ Some authors⁵ have expressed the belief that the infection always begins as acute osteomyelitis of the vertebra, whence it spreads to the adjacent epidural space. It is our belief from study of the literature and our own clinical experience that this may be true in the majority of cases. But infection may enter the epidural space by metastasis or through the intervertebral foramina as an extension of the infection from the neck, mediastinum² or retroperitoneum without previous osteomyelitis. The inevitable result of untreated epidural abscess is serious damage to the spinal cord. This may occur by direct compression of the cord or by interference with its local supply of blood⁶ or lymph.⁷

Pathology.—Regardless of the origin of the epidural abscess, that is, by direct extension or by metastasis from a distant point, the lesion consists of a variable amount of pus and granulation tissue. It may consist of free pus and extend the entire length of the epidural space, from the foramen magnum to the sacrum.⁸ Frequently pus gravitates to the lumbar region from a thoracic or cervical lesion.⁹ Infrequently does one find, as in our case, a circumscribed lesion,¹⁰ localized to one or several segments of the cord. This paper is concerned only with epidural abscess. The epidural granuloma, consisting of a mass of sclerotic tissue with little or no pus, has been described by others.¹¹

1. Fay, Temple, in discussion on Thorner, M. W.; Alpers, D. J., and Yaskin, J. C.: Acute Ascending Paralysis (Landry's Paralysis), *Arch. Neurol. & Psychiat.* 44:17 (July) 1940. Browder and Meyers⁴.

2. Dandy, W. E.: Abscesses and Inflammatory Tumors in the Spinal Epidural Space, *Arch. Surg.* 13:477 (Oct.) 1926.

3. Pincoff, M. C.: Purulent Spinal Perimenigitis, *Tr. A. Am. Physicians* 42:246, 1926.

4. Browder, Jefferson, and Meyers, Russell: Infections of the Spinal Epidural Space: An Aspect of Vertebral Osteomyelitis, *Am. J. Surg.* 37:4, 1937.

5. Hunt, R. J.: Acute Infectious Osteomyelitis of Spine and Acute Suppurative Perimenigitis, *M. Rec.* 65:641, 1904. Browder and Meyers⁴.

6. Elsberg, Charles: Surgery of the Spinal Cord, in Nelson and Leaf Living Surgery, New York, Thomas Nelson & Sons, 1937, vol. 2, p. 459.

7. Hassin, G. B.: Circumscribed Suppurative (Nontuberculous) Peripachymeningitis, *Arch. Neurol. & Psychiat.* 20:110 (July) 1925.

8. Spencer, W. H.: A Case of Idiopathic Inflammation of the Spinal Dura, *Lancet* 1:836, 1879.

9. Cohen, Ira: Epidural Spinal Infections, *J. Mount Sinai Hosp.* 5:219, 1938.

10. Craig, W. McK., and Doyle, J. B.: Metastatic Epidural Abscess of Spinal Cord, *Ann. Surg.* 95:58, 1932. Hassin⁷.

11. Watts, J. A., and Mixer, J. W.: Spinal Epidural Granuloma, *Engl. J. Med.* 204:1335, 1931. Barker, L. F.: Symptomatology of Upper Spinal Cord Markedly Relieved by Extirpation of a Mass of Epidural Granulation Tissue, Following upon Chronic Staphylococcal Infection of Adipose Tissue of Spinal Cord, *Internat. Clin.* 1:1, 1937. Cohen⁹.

SYMPTOMS

A review of the reported cases reveals a characteristic clinical picture. There is usually but not always a history of an acute infection such as a boil or of trauma to the spine at some time prior to the onset of the symptoms. Among 85 cases in which it was possible to determine the interval between onset of acute infection or trauma and development of pain in the back, the interval varied from one day to three years, with an average of four and two-tenths weeks. In our case the interval was approximately seven months.

The earliest and most important symptom is pain in the back. The pain may be gradual or sudden in onset, growing increasingly severe and persistent. It varies in position, depending on the location of the lesion. At the onset it is usually localized, but it may become diffuse in late stages. Referred or radicular pain is common. In unusual instances,¹² the root pain may be present alone, making the diagnosis extremely difficult. With a cervical lesion the root pain may be distributed to the shoulders or upper extremities. With a thoracic or lumbar lesion, because of the distribution of pain, patients have often been described as having "pleurisy," "myositis," "cholecystitis," "lumbago," "perinephric abscess or cortical abscess of the kidney," "intercostal neuralgia" or "sciatica." Abdominal pain and tenderness may mimic the pain and tenderness of an acute abdominal lesion.¹ A point of considerable diagnostic importance is the fact that the pain is often increased by coughing, sneezing, flexion of the neck on the chest or of the legs on the abdomen, pointing to root irritation. Some patients with epidural abscess cannot recline because of the severity of the pain and obtain partial relief on standing or sitting.¹³

Sooner or later neurologic signs or symptoms appear. In 73 reported cases of epidural abscess in which it was possible to analyze the interval between the onset of pain in the back and the development of neurologic signs or symptoms the interval varied from two to forty days, with an average of six and five-tenths days. In our case this interval was eighteen days.

The onset of neurologic symptoms may be sudden, without warning.¹⁴ Thus the first indication of involvement of the cord may be acute retention of urine, anesthesia of the extremities or paraplegia, complete within a few minutes, suggesting acute interference with the blood supply of the cord.⁶ In the majority of the reported cases, however, symptoms of involvement of the cord have been gradual in onset, as in our case, with slight stiffness of the neck, mild disturbances of the bladder and paresthesia or weakness of the extremities. These symptoms, once they have developed, increase so that paraplegia, usually of the flaccid type, is complete within a few days after the onset of neurologic symptoms. Sensory involvement is usually not as frequent or severe as motor involvement, although a sensory level is often present in cases of paraplegia, with anesthesia below the level of the lesion. Infrequently,¹⁵ the sensory level may ascend or descend, depending on the migration of the pus in the epidural space.

DIAGNOSIS

The extreme importance of making a diagnosis early, that is before the onset of paralysis or meningitis, may be judged from the fact that of 103 reported cases of acute-spinal epidural abscess early diagnosis was made in only 5.¹⁶ In 33 the condition was recognized for the first time at autopsy. In 1 the diagnosis was made after the development of meningitis,¹⁷ which proved fatal despite operation. In 64 the diagnosis and operation were deferred until the onset of paralysis. Of the 64 patients 37 died, 12 recovered with residual paralysis and 15 recovered completely. The 5 who had an early diagnosis and operation all recovered completely. It is clear that the mortality is 100 per cent without operation and that successful operation depends on early diagnosis.

The relentless pain in the back accompanying an epidural abscess is of the greatest importance in diagnosis. The unusual severity and persistence of the pain should put one on guard, as suggested by Dandy,² for slight neurologic symptoms or signs. Judging from the reported cases, the earliest neurologic signs seem to be slight stiffness of the neck, a slight Kernig reflex and an aggravation of the pain in the back on flexion of the neck or thigh. The clinical diagnosis in our case was based on the development of an abnormal abdominal reflex.

A sign of value in early diagnosis is tenderness on percussion of the portion of the spine overlying the abscess. This sign is almost invariably present. In a few cases of a proved abscess,⁹ as in our case, tenderness was limited largely or entirely to the costovertebral angle, leading to the incorrect diagnosis of perinephric abscess or cortical abscess of the kidney. In rare instances¹⁸ spinal tenderness has been absent, so that this sign cannot be relied on constantly in diagnosis.

Local edema is apparently of little value in early diagnosis, since this sign has been reported in cases of late involvement associated with mediastinal or perinephric abscess or paraplegia.¹⁹

Despite clear clinical signs and symptoms, early diagnosis must depend on spinal puncture. We believe that a spinal puncture is indicated for every patient with acute infection presenting severe pain in the back and/or a radicular syndrome, with or without signs of involvement of the cord. A preoperative diagnosis may be made on finding pus in the epidural space or an abnormal spinal fluid.

The changes in the spinal fluid depend on the degree of subarachnoid block and the extent of involvement of the leptomeninges. The fluid has been variously described as clear, cloudy, hemorrhagic or purulent. The cells have been few or many. The fluid has been sterile or contained organisms. An increase in total protein, with or without dynamic block, is of vast importance in diagnosis, since this may be the only abnormal condition. When the block is further advanced the fluid may be xanthochromic and may coagulate on

12. Bellerose, A., and Amyot, Roma: Metastatic Epidural Abscess, *Canad. M. A. J.* 27: 629, 1932. Pincoffs, M. C., and Gundry, Lewis: Epidural Abscess with Paraplegia, *Internat. Clin.* 3: 49, 1936.
13. Stammers, F. A. R.: Spinal Epidural Suppuration with Special Reference to Osteomyelitis of the Vertebrae, *Brit. J. Surg.* 26: 366, 1938.
14. Van Den Berg, W. J.: Acute Metastatic Spinal Epidural Abscess, *California & West. Med.* 46: 257, 1937. Mixter, W. J., and Smithwick, R. H.: Acute Intraspinal Epidural Abscess, *New England J. Med.* 207: 126, 1932. Stammers.¹³
15. Cathey, A. D.: Epidural Infections of the Spine, *Tri-State M. J.* 7: 1484, 1935. May, W. N.: Staphylococic Infection of the Epidural Space, *Roy. Berkshire Hosp. Rep.*, 1932, p. 144. Van Den Berg.¹⁴

16. Fitch, T. S. P.: Sulfathiazole in Staphylococcus Aureus Epidural Abscess with Septicemia and Pyemia, *Arch. Pediat.* 57: 119, 1940. Slaughter, F. B.; Fremont-Smith, Frank, and Munro, Donald: Metastatic Spinal Epidural Abscess, *J. A. M. A.* 102: 1468 (May 5) 1934. Stanley, Dean: Acute Metastatic Spinal Epidural Abscess, *Illinois M. J.* 68: 515, 1935. Cohen,⁹ Van Den Berg.¹⁴
17. Gasul, B. M., and Jaffé, R. H.: Acute Epidural Spinal Abscess, *Arch. Pediat.* 52: 361, 1935.
18. Abrahamson, Leonard; McConnell, A. A., and Willon, G. R.: Acute Epidural Spinal Abscess, *Brit. M. J.* 1: 1114, 1934. Wei, Y. L.: Acute Spinal Pachymeningitis Externa, *China M. J.* 42: 654, 1928. Spencer.⁸
19. Bunch, G. H., and Madden, Emmett: Acute Extradural Abscess with Compression of the Cord, *Am. J. Surg.* 20: 763, 1933. Christenson, F. C.: An Unusual Case of Spinal Abscess, *Wisconsin M. J.* 22: 472, 1924. Stammers.¹³ May.¹⁵

standing, and there may be little or no response to compression of the jugular vein. To determine block it may be necessary to repeat the spinal tap over several days or to perform a combined cisternal and lumbar tap and compare the protein content of the spinal fluid.

The presence of pus in the epidural space is pathognomonic of spinal epidural abscess. An absence of pus on lumbar tap, however, does not rule out a lesion at a higher level of the cord. When the spinal fluid is abnormal but no pus is found, the level of the lesion may be determined by careful neurologic examination. In the absence of localizing signs, however, the lesion may be located by carefully tapping the spine at the level of maximum spinal tenderness or by the introduction of iodized oil into the subarachnoid space.²⁰ In performing the spinal tap great caution must be observed to prevent contamination of the spinal fluid with epidural pus.²¹

The roentgenogram is of no value in the early diagnosis of spinal epidural abscess. Acute osteomyelitis of the spine, if present, is frequently not demonstrable by roentgenogram.²² Of 20 reported cases in which roentgenograms were made preoperatively, evidence of osteomyelitis was present in 1; it was absent in the others, although these were all cases of late spinal involvement associated with paraplegia. Shadows of soft tissue in front of or to the side of the spine, indicating prevertebral⁹ and paravertebral²³ abscess, have been recognized in roentgenograms but always in cases of late involvement with complications.

DIFFERENTIAL DIAGNOSIS

A review of the literature reveals that acute spinal epidural abscess has been frequently confused with a number of medical and neurologic conditions. The more important of these are acute anterior poliomyelitis, acute myelitis, epidemic meningitis, perinephric abscess or cortical abscess of the kidney and tumor of the spinal cord.

1. *Acute Anterior Poliomyelitis.*—Pain in the back is not uncommon with acute anterior poliomyelitis. This symptom in association with weakness of the extremities and abnormality of the spinal fluid may cause difficulty in diagnosis. Sensory changes, subarachnoid block or pus in the epidural space excludes poliomyelitis.

2. *Acute Myelitis.*—Paraplegia, anesthesia and paralysis of the sphincters may occur in acute myelitis, together with fever, pain in the back and in rare instances spinal block, so that the clinical picture may closely simulate that of acute spinal epidural abscess. Several features distinguish myelitis from epidural abscess. There is usually no history of suppuration or spinal trauma. The onset is likely to be with symptoms of a systemic infection rather than with pain in the back as in epidural abscess. Pain in the back in myelitis is usually mild and may be delayed until the onset of or follow the symptoms of involvement of the cord. Evidence of dissemination of the lesion may be

obtained in cases of myelitis; involvement of the cranial or peripheral nerves may be present. Finally, spinal tenderness and epidural pus are absent in myelitis.

3. *Primary Suppurative Meningitis.*—Headache, fever, stiffness of the neck or back, positive Kernig or Brudzinski reflexes and a cloudy or purulent spinal fluid, with or without organisms, may occur in spinal meningitis or in spinal epidural abscess. The distinctive onset with pain in the back, spinal tenderness, paralysis, sensory involvement and subarachnoid block indicate an epidural abscess. A careful spinal tap with the stilet removed and frequent suction will differentiate pus outside the dura from pus in the subarachnoid space. A differential tap, a comparison of the cisternal and the lumbar spinal fluid, may be of further aid in diagnosis.

4. *Perinephric Abscess or Cortical Abscess of the Kidney.*—A history of suppuration, such as that in a furuncle, followed by lumbar pain, signs of acute infection and loin tenderness, with normal results of urinalysis, are common to carbuncle of the kidney and spinal epidural abscess. Neurologic signs or symptoms, however slight, are indicative of a spinal lesion. A spinal tap should always be done if there is any question of an epidural abscess. In unusual instances²⁴ of epidural abscess, pus may extend through the intervertebral foramina to the retroperitoneal space and produce swelling in the loin and obliteration of the margin of the psoas muscle on roentgen examination, leading to the incorrect diagnosis of a primary abscess of the psoas or a perinephric abscess. On the other hand, the infection may begin as a cortical abscess of the kidney or a perinephric abscess and involve the cord or epidural space secondarily.²⁴ Regardless of the origin of epidural abscess, laminectomy is indicated.

5. *Tumor of the Cord.*—Tumor of the spinal cord should offer no difficulties in differential diagnosis, since the acute onset of pain in the back and fever and the rapid progress of the lesion speak against tumor of the cord.

TREATMENT

The treatment is immediate surgical intervention. Laminectomy with complete drainage of the epidural space must be carried out.

SUMMARY

Acute spinal epidural abscess is a definite clinical entity that demands early diagnosis and operation to prevent paralysis or death. The diagnosis is easy to make if the following sequence of events is considered: (1) a history of preexisting infection or spinal trauma; (2) a latent period between this and the time of onset of pain; (3) the development of severe pain in the back, signs of acute infection and spinal tenderness; (4) a latent period between the pain in the back and the onset of neurologic signs and symptoms, and (5) the development of symptoms and signs of involvement of the cord or meninges leading to paralysis or meningitis.

The identical signs and symptoms may accompany a variety of lesions of the cord, but this sequence is indicative of spinal epidural abscess. A definite diagnosis may be made on finding pus in the epidural space or abnormal spinal fluid in a patient presenting the characteristic clinical picture.

3459 Fifth Avenue.

20. Bennett, A. E., and Keegan, J. J. Circumscribed Suppuration of Spinal Cord and Meninges, *Arch. Neurol. & Psychiat.* 19: 329 (Feb.) 1928. Abrahamson, McConnell and Willson.¹⁸

21. Ro-amond, Eugene: Epidural Abscess Complicated by Staphylococcus Meningitis, *J. Pediat.* 1: 230, 1932. Cohen,⁹ Miret and Smithwick.¹⁴

22. Klein, H. M.: Acute Osteomyelitis of the Vertebrae, *Arch. Surg.* 66: 168 (Feb.) 1933.

23. Brill, N. Q., and Silverman, D. E.: Pyogenic Osteomyelitis of the Spine, Mediastinal Abscess and Compression of the Cord, *J. A. M. A.* 110: 2001 (June 11) 1935.

24. Abeshouse, B. S., and Bogorad, D. E.: Perinephric and Cortical Abscesses of the Vertebrae and Spinal Cord, *Urol. & Gynec. Per.* 20: 293, 1935.

Clinical Notes, Suggestions and New Instruments

BILATERAL THROMBOSIS OF ANTERIOR CEREBRAL ARTERY FOLLOWING STIMULATION OF A HYPERACTIVE CAROTID SINUS

JUDAH MARMOR, M.D., AND M. R. SAPIRSTEIN, M.D.
NEW YORK

Stimulation of the carotid sinus, because of its importance in the differential diagnosis of neurologic diseases, has become routine in the complete neurologic examination. The syncope, convulsive seizure, asystole or fall in blood pressure which is produced may frequently be alarming, but there are no reports in the literature of any untoward results following stimulation of a hypersensitive carotid sinus. The present report deals with a case in which, immediately after induction of carotid sinus syncope, a progressive thrombosis of both anterior cerebral arteries developed, which ended fatally.

REPORT OF CASE

A railroad brakeman aged 53 was seen in neuropsychiatric consultation because of a complaint of emotional instability and mental depression for over two years. He had always been irritable. He had had typhoid in 1902, amebic dysentery, treated with emetine, in 1938 and a severe respiratory infection in September 1940 which had left him with a cough. The general physical examination revealed no significant abnormalities except for peripheral and retinal arteriosclerosis. The blood pressure was 130 systolic and 75 diastolic. Fluoroscopy of the chest, heart and gastrointestinal tract revealed no pathologic conditions. The electrocardiogram, basal metabolic rate and sedimentation rate were normal and the Kahn test and gastric and urine analysis were negative. The hemoglobin content was 114 per cent, the red blood cell count 6,100,000 and the leukocyte count 14,000, with a normal differential. The hematocrit test was within normal limits.

Neurologic examination was negative except for generally depressed deep reflexes and lack of flexion of the right big toe on plantar stimulation. The carotid sinus reflex was then tested. Compression of the left carotid sinus for thirty seconds produced no abnormal reactions. Compression of the right carotid sinus caused a definite immediate slowing of the pulse, followed in a few seconds by generalized clonic twitchings and syncope. The latter lasted about ten to fifteen seconds, after which the patient apparently recovered completely and laughingly said "I guess I must have fainted." The psychiatric examination was then begun. It had not proceeded more than a few minutes when the patient suddenly became unresponsive, developed a fixed, uncomprehending stare, slowly pitched over to the left and became incontinent of urine. He was completely aphasic and apraxic (the patient was right handed). Forced grasping of the right hand and bilateral groping movements were noted. The right leg did not move on stimulation with a pin, and a definite Babinski reflex appeared on the right side.

A clinical diagnosis of probable thrombosis of the left anterior cerebral artery was made, and the patient was immediately hospitalized. Within a few hours after the onset there was beginning spasticity of the right arm and leg. All the deep reflexes became hyperactive (more on the right) and the abdominal reflexes could not be elicited. There was no paralysis at that time, but the right arm and leg were apparently weaker than the left. The patient reacted to pinprick all over his body. A grasp reflex developed in the left hand also, and sucking and chewing reflexes were easily elicited. He apparently understood simple directions but had a complete motor aphasia and apraxia. There was no facial weakness. Difficulties in respiration with cyanosis developed. The lungs were clear, however, and roentgen examination of the chest was negative. The blood pressure was 142 systolic and 90 diastolic.

From the Neurological Service of Dr. I. S. Wechsler, Mount Sinai Hospital.

The spasticity rapidly became more severe, and within six hours the right arm was in rigid flexion and could not be extended. The right leg was extended at all the joints and the left leg was now also involved, but to a lesser degree. Least involved was the left arm. A Babinski reflex now appeared on the left also. The following morning, about twenty hours after the onset, the patient lapsed into stupor and Cheyne-Stokes respirations developed. The spasticity became more severe and the right arm could not be moved. The eyes were not deviated at any time.

A lumbar puncture, the day after the onset, had an initial pressure of 300 mm. of water, normal dynamics and a final pressure (after removal of 10 cc.) of 130 mm. The fluid was faintly xanthochromic, contained 2,000 red blood cells and a total protein of 81 mg. A blood count revealed leukocytosis (15,200 cells) with 83 per cent polymorphonuclears. Urinalysis and blood chemistry studies were negative. Electroencephalography two days after the onset revealed diffuse delta activity of various frequencies with much one and one-half second activity of from 50 to 100 microvolts.

The temperature continued to rise, the breathing became more dyspneic and the stupor deepened. The right pupil became dilated, the left constricted and both were fixed to light. Flaccidity became generalized three days after onset (with deep coma) but the right arm was the last to lose its spasticity. The fundi never showed evidence of papilledema. The patient died, four days after the onset, with respiratory distress and a temperature of 105 F.

Postmortem examination revealed coronary sclerosis and myocardial fibrosis, acute congestion of all the viscera, bronchopneumonia with pulmonary edema, adrenal rest in the left kidney and cystitis granulosis. The brain was diffusely swollen at autopsy. The gyri were wide and flattened and the sulci were narrowed. There was definite softening of both frontal poles, most pronounced on the orbital surface of the right frontal lobe, where there were several small hemorrhagic areas. There was yellowish discoloration of the cortex at both frontal poles, most noticeable on the orbital surfaces and on the convexity of the cerebral hemispheres in the superior frontal convolutions. The vessels of the circle of Willis were moderately thickened, and in the region of the anterior cerebral arteries (more on the right) and the anterior communicating artery there was apparent thrombus formation. Sections of these vessels revealed recent thrombus formation, most pronounced along an area of thickened and hyperplastic intima.

Sections of the brain revealed large hemorrhagic areas on the medial aspect of both frontal lobes (along the distribution of the anterior cerebral arteries). This was more noticeable on the right side, where the hemorrhagic area extended posteriorly and laterally to involve the medial portion of the corpus striatum. There were other smaller areas of hemorrhage scattered in the substance of the cerebral hemispheres.



Serial sections of brain, illustrating the hemorrhagic areas on the medial aspect of both frontal lobes. On the right side, where the lesion is more extensive, it extends to the medial aspect of the basal ganglia.

CONCLUSIONS

A man aged 53 had bilateral thromboses of the anterior cerebral arteries a few minutes after stimulation of a hyper-sensitive carotid sinus. While it is possible that the patient would sooner or later have had an ictus spontaneously, it is nevertheless felt that the slowing of the pulse and the fall in blood pressure produced by stimulation of the carotid sinus was a contributory factor in prematurely precipitating the cerebral thrombosis.

It is well known that the syndrome of the hypersensitive carotid sinus is most frequently observed in elderly persons with evidence of advanced arteriosclerosis, cerebral as well as myocardial. It may well be that carotid sinus stimulation is not entirely without danger in such persons. It would seem advisable that in all patients with evidences of advanced cerebral arteriosclerosis, stimulation of the carotid sinus should be performed cautiously and should be interrupted at the first evidence of hypersensitivity without continuing to the point of actual syncope.

CARCINOMA OF THE LUNG

A TEN YEAR SURVEY OF NECROPSIES IN THE CHARITY
HOSPITAL AT NEW ORLEANS

BÉLA HALPERT, M.D., NEW ORLEANS

A survey of the necropsy material of the Charity Hospital at New Orleans for the past decade reveals a relative and absolute increase of carcinoma of the lung. This is in accord with the reports of others.¹

During the decade ending Dec. 31, 1940, a total of 12,972 necropsies were performed, 8,862 of which were on persons over 1 year old. Among the subjects there were 135 with carcinoma of the lung, 205 with carcinoma of the stomach and 66 each with carcinoma of the biliary system and of the pancreas. Carcinoma of the lung was therefore more than one half as frequent as carcinoma of the stomach and more frequent than carcinoma of the biliary system and carcinoma of the pancreas together. The year by year analysis shows that while in number of cases carcinoma of the stomach remained about the same, that of the lung increased gradually and during the past two years exceeded carcinoma of the stomach (table 1).

Race, Sex and Age Incidence.—Of the 8,862 necropsies 3,838 were performed on white and 5,024 on Negro subjects, a proportion of approximately 4:5 (table 2). Carcinoma of the lung, however, occurred 81 times among the white and 54 times among the Negro subjects, a proportion of 1.5:1.

In the total necropsy material there were 5,635 males (2,610 white and 3,025 Negro) and 3,227 females (1,228 white and 1,999 Negro), a proportion of almost 2:1. Carcinoma of the

TABLE 1.—Regional Distribution of Carcinoma, Charity
Hospital of Louisiana at New Orleans, 1931 to 1940

	Necropsies on Persons Over 1 Year Old	Lung	Stomach	Biliary System	Pancreas
1931	628	3	15	7	1
1932	772	9	22	2	9
1933	996	9	19	10	6
1934	909	11	22	5	7
1935	921	7	22	4	5
1936	1,072	13	19	4	9
1937	837	13	21	9	2
1938	828	16	19	11	4
1939	967	24	22	7	8
1940	932	30	24	7	13
Total	8,862	135	205	66	63

lung, however, occurred in 123 men (73 white and 50 Negro) and in 12 women (8 white and 4 Negro), a proportion of about 10:1.

From the Departments of Pathology and Bacteriology of the Louisiana State University School of Medicine and the Charity Hospital.

1. Rosahn, Paul D.: Incidence of Primary Carcinoma of the Lung, Arch. Path. 29: 649-664 (May) 1940. Ochsner, Alton, and DeBakey, Michael: Carcinoma of the Lung, Arch. Surg. 42: 209-258 (Feb.) 1941. Menne, Frank R., and Anderson, Melvin W.: Bronchiogenic Carcinoma: Its Incidence in the Pacific Northwest, Together with a Commentary on Eighty-Four Instances, in preparation.

The youngest patient was 21 and the oldest 75. Two died in the third, 7 in the fourth, 24 in the fifth, 56 in the sixth, 39 in the seventh and 7 in the eighth decade of life. More than 80 per cent of the patients were thus in the sixth decade of life or older.

TABLE 2.—Distribution of Carcinoma of the Lung

	Men		Women		Total
	White	Negro	White	Negro	
Squamous cell.....	38	30	5	1	74
Reserve cell.....	23	15	0	1	39
Columnar cell.....	12	5	3	2	22
Carcinoma of lung...	73	50	8	4	135
Necropsies.....	2,610	3,025	1,228	1,999	8,862

Cellular Structure.—Among the 135 carcinomas of the lung, 74, more than 50 per cent, were squamous cell; 39, approximately 30 per cent, were reserve cell, and 22, less than 20 per cent, were columnar cell carcinomas.

SUMMARY AND CONCLUSION

A survey of the necropsy material of the Charity Hospital at New Orleans disclosed that during the past decade carcinoma of the lung was discovered in 135 of 8,862 necropsies on persons over 1 year old.

A comparison with the number of carcinomas of the stomach, of the biliary system and of the pancreas in the same series suggests that carcinoma of the lung is becoming the second, if not the first, most common malignant neoplasm in the male.

DEPENDENCE OF THE COLD PRESSOR REACTION
ON PERIPHERAL SENSATION

J. D. SULLIVAN, M.D., ALBANY, N. Y.

Assistant Resident in Neurology and Psychiatry, Albany Hospital;
Assistant in Neurology and Psychiatry, Albany Medical College

Hines and Brown¹ in 1932 introduced the local application of cold stimuli as a procedure for the quantitative estimation of the reactivity of the vasomotor system. They were seeking a standard stimulus to increase the blood pressure. The cold pressor test has since been extensively used.²

These investigators¹ describe the changes which occur when the hand is immersed in ice water: "The systolic and diastolic blood pressures immediately rise, and return to the basal in from one to two minutes. Similar results are obtained by placing a foot in cold water, but there is no augmented response by placing both hands or both feet, or all four extremities, in ice water. We assumed that the basis of this reaction is the sudden stimulation of the cutaneous nerves of temperature and pain. The response is too rapid to be the result of hormonal and chemical influences."

To prove this theory Ayman and Goldshine suggested that the test should be carried out on an extremity completely devoid of sensation to cold and pain such as is found in syringomyelia. A patient with an equally suitable condition was recently admitted to the neuropsychiatric service of the Albany Hospital.

P. M., a white man aged 35, had a transection syndrome fourteen years ago after being struck in the back by a falling beam. Because of pain, a laminectomy was performed one year after the accident. At operation, the spinal cord below the first lumbar segment and all intradural nerve roots at this level were removed. Since that time the patient has been completely paralyzed from the hips down, and there has been complete anesthesia to all forms of sensation below approxi-

From the Department of Neurology and Psychiatry of the Albany Hospital and Albany Medical College.

1. Hines, E. A., and Brown, G. E.: A Standard Stimulus for Measuring Vasomotor Reactions, Proc. Staff Meet., Mayo Clin. 7: 322-335 (June 8) 1932.

2. Ayman, David, and Goldshine, A. D.: Cold as a Standard Stimulus of Blood Pressure, New England J. Med. 219: 650-655 (Oct. 27) 1938. Miller, J. H., and Bruger, Maurice: Cold Pressor Reactions in Normal and Primary Essential Hypertension, Am. Heart J. 18: 327-333 (Sept.) 1939.

mately the first lumbar dermatome. Spontaneous parasthetic pain has occurred in paroxysms since the injury under the dermatomes innervated by the first lumbar segment on the left and the first and second on the right. The circulation in the legs has remained unimpaired.

The immersion of this patient's hand into ice water induced a constant rise in systolic and diastolic blood pressures; thus in one instance from 120 to 140 systolic and from 90 to 104 diastolic. There was an accompanying increase in the pulse rate from 80 to 110 a minute. When the foot was immersed no constant change in these indexes was noted. Occasionally a slight systolic rise of less than 10 mm. of mercury could be observed, but most often there was no change. Acceleration of the pulse rate or increase of the diastolic pressure was not effected by immersion of the foot in cold water.

SUMMARY AND CONCLUSION

It has been assumed that the basis of the cold pressor reaction is the sudden stimulation of the cutaneous nerves of temperature and pain.

Studies on the upper and lower extremities of a patient with a transection syndrome tend to substantiate this assumption.

New Scotland Avenue.

Special Article

SYPHILOLOGY: RECENT ADVANCES

GENERAL SCIENTIFIC LECTURE AT
CLEVELAND SESSION

H. N. COLE, M.D.
CLEVELAND

Every physician devoting his life work to a specialized line of endeavor is bound to have more or less correspondence with various colleagues and lay persons in regard to problems arising along that line.

It is not often, however, that the same specialist goes to the trouble of collecting and analyzing this correspondence.

This has recently been done by Stokes and Ingraham¹ in two related publications, the one that is of particular interest here being entitled "Two Thousand Questions the Doctor Asks About Syphilis." In the period from July 1928 to July 1938 nine hundred and fifty-five letters have been answered either by them or in the Queries and Minor Notes of THE JOURNAL. In the case of the latter, they have been answered anonymously by various correspondents. The total number of questions answered by Stokes and by the correspondents was 2,115. Statistical break down of the 2,115 inquiries revealed some forty-eight categories or types. Eighty-seven and five-tenths per cent of the questions (1,844) came from physicians and around 50 per cent of the inquiries were covered by six main headings—though they did not by any means comprise all the most important subjects.

These two articles I have read with much interest, and I believe that, to a certain extent, they indicate problems arising in the mind of the practitioner. Possibly they might serve in part as a guide to the subject

to be discussed: "Syphilology: Recent Advances." Some of the subjects are not pertinent to this discussion.

There were 295 questions, or 14 per cent of the whole, devoted to a subject most important to the physician and to his patient—treatment schedules for individuals. The largest number of the questions were in regard to handling cases of late latent syphilis and neurosyphilis, next most frequently, congenital syphilis, early and late, and ill defined types of syphilis for which satisfactory answers were difficult. Following these came early latent syphilis, cardiovascular types and secondary syphilis, and then some minor items. Stokes very justly pointed out the difficulty of making out a treatment schedule for late syphilis, particularly of neurovascular, cardiovascular and visceral types. The case is one unto itself and must be individualized depending on the observations made. I would agree with this and to offer an example: Broadly one may say that some form of fever therapy is indicated in most cases of syphilis of the central nervous system; however, a person with a beginning dementia paralytica but complicated by a large aneurysm of the aorta would hardly come within the foregoing accepted indication. Many of the late manifestations of syphilis will have to be gone over carefully, and the treatment will of necessity be for that case alone. On the other hand, in early latent, in primary and in secondary syphilis it will be much easier to make out a schedule which within reason will apply to most patients.

The next most frequent category of questions, 11.25 per cent of the whole, was on drugs. It comprised 238 inquiries. There were twenty-nine items on arsenicals, twenty-seven on bismuth and nine on mercury. There were inquiries about water soluble and oil suspended preparations and about bismuth content. The questions on arsenicals included relative merits of arsphenamine and neoarsphenamine and of preparations to be used intramuscularly, sulfarsphenamine and bismarsen. Questions were also asked on the technic of intramuscular injections, on intraspinal therapy and on spinal drainage. Queries were made on effects of iodides and on particular brands of neoarsphenamine.

The following four groups of questions were not pertinent to this paper: comprising "serologic tests," 9.25 per cent of the whole; "treatment reactions," 5.5 per cent of the whole; "cases the doctor wishes diagnosed," 5 per cent of the whole, and "cases for differential diagnosis," 5 per cent of the whole.

In one of the most important problems in public health—the control of infectiousness—the physician has not been particularly interested. At least the questions amounted to only 3.5 per cent and was relegated to seventh place in prominence.

Only 2.5 per cent of the questions were in regard to the question of syphilis and pregnancy—one of the really great problems in prophylaxis of congenital syphilis. Such questions were asked as "Shall we do an abortion?" "Shall the mother be treated at all?" "What are the child's chances?" and "Is bismuth alone sufficient prenatal treatment?" As Stokes puts it, "Such inquiries are evidence of abysmal ignorance of modern knowledge of a most important preventive field." This is indeed putting it mildly and will be discussed further in the paper.

Questions on fever therapy, on spinal fluid, on treatment of syphilis complicated by other factors, on prog-

Read in the General Scientific Meetings at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 2, 1941.
From the Department of Dermatology and Syphilology of the Western Reserve University School of Medicine and of the University and Cleveland City Hospitals.
1. Stokes, J. H.; Ingraham, Norman R., and Stannard, E. H.: A Study of Consultation by Correspondence in Syphilis, Ven. Dis. Inform. 21: 129-147 (May) 1940; Two Thousand Questions the Doctor Asks About Syphilis, *ibid.* 21: 147-156 (May) 1940.

nosis of certain cases and on whether syphilis should ever be treated all came in groups of around 2.5 per cent to 2 per cent of the whole.

SYPHILIS AND PREGNANCY, AND CONGENITAL SYPHILIS

On the other hand, the treatment of congenital syphilis rated only seventeenth in the number of questions asked. Does the physician feel that he already knows all there is to be known on the subject? It was Stokes' opinion that "the whole subject of syphilis in pregnancy and congenital syphilis deserves further broadcasting and instruction to the profession." To this I heartily agree. In answer to one query—No! Syphilis is not transmitted from father to the fetus. The fetus can be infected only through transmission of the *Treponema pallidum* from the mother's blood through the placenta to the fetal circulation. Again, an abortion should never be done because of syphilis in the mother; rather, she should be given treatment. This should be instituted at the earliest possible moment. The earlier the diagnosis the better, and to that end the physician should take a serologic check on every prospective mother at the first visit, again at the fifth month and at the seventh month. This repetition is necessary to detect infection taking place later in pregnancy. Around 1,000,000 potential mothers in the United States have syphilis² and each year these women transfer the disease to at least 85,000 fetuses, 25,000 dying before birth and 60,000 being born alive with syphilis. Only about one fifth of the pregnant women seek medical care before the fifth month, at the time most favorable for the diagnosis and treatment of congenital syphilis. Treatment should not be confined to bismuth preparations alone but to arsenic as well, most emphasis being placed on the arsenicals. It has been shown repeatedly that when treatment is begun before the fifth month of pregnancy—the earlier the better—practically all children will be born alive and a large percentage free from congenital syphilis; that is, provided the treatment is of the continuous type, that it is started with weekly intravenous injections of an arsenical in moderate dosage, followed immediately by a short series of intramuscular injections of bismuth subsalicylate, and that it is ended up by further arsenicals administered weekly up to the birth of the child. Even if the treatment is started late in pregnancy, in which case concomitant injections of arsenicals and of bismuth are in order, there is an excellent chance of getting a viable child rather than a dead one. The child may then itself be treated for the disease. It is not necessary to treat a pregnant congenital syphilitic woman unless it is suspected that she has contracted an acquired syphilis on top of the congenital disease. Third generation syphilis is almost unheard of.

When the diagnosis of early congenital syphilis has been made on a child, therapy² should be started either by mercury with chalk 0.015 Gm. to 0.03 Gm. ($\frac{1}{4}$ to $\frac{1}{2}$ grain) three times a day for a week or so or by intramuscular injections of bismuth subsalicylate 0.001 Gm. per kilogram weekly for three weeks. The newborn babe with congenital syphilis cannot withstand the shock of severe treatment. This may then be followed with intramuscular injections weekly of sulfarsphenamine 0.005 Gm. per kilogram gradually raised to 0.01 Gm. per kilogram for a series of ten injections. There-

after the treatment should consist of alternating continuous courses of ten intramuscular injections each of sulfarsphenamine gradually raised to a maximum of 0.015 Gm. per kilogram and of bismuth subsalicylate raised to a maximum of 0.002 Gm. per kilogram until the child has received from forty to fifty of each. Smith³ has found that with infants under 6 months of age there will be more than 80 per cent cures if the patients receive fifty injections of these drugs before the age of 2 years. Moreover, such treatment is an excellent prophylaxis of the devastating later crippling ravages of congenital syphilis—involvement of the eighth nerve, involvement of the central nervous system, osseous involvement and interstitial keratitis. The best present known treatment for interstitial keratitis is the use of fever therapy along with large doses of vitamin B₂ by mouth. Vitamin B₂ alone is not sufficient, but it does seem to be of some value. The fever therapy best serving the purpose is either malaria or the hypertherm, the patient being given from eight to ten bouts of fever. In fact, in these cases the hypertherm may be preferable, as the treatments may then be given as desired, e. g. twice or three times a week. Anti-syphilitic therapy and potassium iodide should not be used in cases of interstitial keratitis. Later the arsenicals and bismuth may be employed, as in cases of acquired syphilis, in alternating courses of the drugs given in a continuous fashion.

DRUGS USED IN THE TREATMENT OF EARLY SYPHILIS

Another category of questions on drugs deserves an answer. It has been my feeling, many times reiterated, that the physician would do well to know a few anti-syphilitic drugs and to know them well rather than to be all mixed up and confused with this and that water soluble bismuth, liposoluble bismuth and oil suspension of bismuth. For example, the occasion will be rare indeed when the physician will be required to use more than an accepted 10 per cent oil suspension of bismuth subsalicylate. It may be given intramuscularly once a week in alternate buttocks in courses of ten to twelve injections—dosage from 1 to 2 cc. for the adult. However, the physician should clearly differentiate such a compound from the various water soluble preparations on the market which must be given two or three times a week if a sufficient bismuth level in the blood stream is to be achieved. The patient getting a single weekly injection of a water soluble bismuth salt is being undertreated and is in danger of a relapse of the syphilis.

For arsenicals, there is a variety of acceptable compounds. It has been shown that there is little variance in the therapeutic value of the various accepted neoarsphenamines. Undoubtedly arsphenamine is the most potent; it is also the most difficult to prepare. On that account the average physician will prefer to use either neoarsphenamine or mapharsen—the dosage of the former being from 0.3 to 0.75 Gm. and of the latter from 0.03 to 0.06 Gm. Reactions with the latter are far less frequent and thus many prefer mapharsen. Mapharsen should be thoroughly aerated and mixed with water and should be rapidly injected—in contradistinction to neoarsphenamine. The injections of mapharsen may be given every five days for a course of twelve treatments. The situation occasionally arises in which intra-

2. Cole, H. N.; Jeans, Phillip C.; Moore, J. E.; O'Leary, Paul A.; Parran, Thomas; Stokes, J. H., and Vonderlehr, R. A.: Syphilis in Mother and Child, Ven. Dis. Inform. (supp. 7) pp. 1-20, 1940.

3. Smith, F. R., Jr.: Congenital Syphilis: Results of Treatment in Children, J. A. M. A. 105:409-411 (Aug. 10) 1935.

muscular injections may be necessary, and in such a situation sulfarsphenamine is the drug of choice. It should be gently dissolved in 1 to at most 2 cc. of distilled sterile water and is injected in alternate buttocks once a week for a course of ten treatments. This preparation is used freely in the New York State syphilis clinics and has given excellent results in cases in which an intramuscular compound is necessary. It is the drug of choice in cases of early congenital syphilis, in which it is used in slowly ascending doses from 0.005 up to 0.015 Gm. per kilogram.

LONG TERM MANAGEMENT OF EARLY SYPHILIS

There remains for consideration a treatment schedule applicable to the average case of early syphilis. By far the largest proportion of inquiries were relevant to this subject.

The physician encountering a case of early syphilis must keep several factors in mind.

True, the public health aspect comes first and should be properly satisfied. Sources and contacts should all be carefully checked for a sufficient time to assure the physician that there is no danger of further spread.

This discussion, however, is devoted more to the therapeutic management of the freshly infected syphilitic patient, newer aspects of this therapeutics on the final outcome of the disease being kept in mind. For example, there is much talk today of a five day intravenous drip treatment for acute syphilis. Such a plan would obviate any danger of lapse of treatment by the patient. It would be all over in probably seven to ten days of hospitalization. Every one freely admits that this very lapse of treatment is one of the weak points of the present management of the disease. Even in the best conducted clinics and offices, even with the best social service follow-up, many of the patients will never finish their course of treatment and consequently will never be cured and may be a menace to themselves and to every one with whom they come in contact. Consequently, if such a type of treatment were sure to cure the patient's disease and if it were within the bounds of reasonable safety to the person treated, it would be a great boon to medicine and to public health. Since, however, it is too new to be considered as more than in the experimental stage, it hardly comes within the scope of a talk intended to bring before the family practitioner approved and tried remedies.

Of course, the ideal treatment of acute syphilis and one to be aimed at would be such that the disease would be entirely eradicated through the use of a single dose of the suitable drug. Another necessary point would be that this drug should exercise no harmful effect on the host. Ehrlich and others thought that he had discovered it in arsphenamine (606). Moreover, those of us who used this preparation by the intramuscular route in the early days were profoundly impressed with its therapeutic effects as contrasted with those achieved by mercurial preparations. Unfortunately, some weeks to months later we began to encounter two things: first the relapse of the syphilis and, second, the fact that this intramuscular injection with its alkaline "pH" frequently caused an enormous slough which was very slow in healing. In other words, two of the main requirements for the ideal remedy had failed and it was necessary to look further afield, either in the line of another remedy or in the perfection of the use of the preparation already at hand. Then the use of the drug

intravenously was instituted, and multiple doses were employed. At first the arsenical was used along with its adjuvant mercury. Later bismuth salts were found to have a far higher spirocheticidal effect. Moreover, the injections were less painful, so that a further great step in the treatment of syphilis was instituted. Today, mercury is seldom employed unless there is a question of idiosyncrasy to either arsenic or bismuth.

In the past decade the Cooperative Clinical Group, under the auspices of the U. S. Public Health Service, has been bringing out a series of statistical studies on various phases of syphilis—particularly as related to its therapy.

These studies⁴ early pointed out the necessity of a continuous type of treatment if best results were to be achieved. In other words, the patient's syphilis was to be treated with alternating courses of an arsenical and of a bismuth salt given in a continuous manner—in fact, even overlapping by having the first bismuth injection administered with the last arsenical in a course of treatment. This continuous form of treatment was found to be far superior to the intermittent form of treatment previously in vogue and unfortunately used all too much even today. In the intermittent method a purposeful rest period is instituted at the end of each course of treatment. Moreover, the continuous treatment was vastly superior in its effects to that form termed irregular in which the patient comes in when he feels like it. Finally, the poorest showing was made by the so-called intensive type of therapy in which three daily injections of an arsenical were followed by a course of injections of heavy metal and then a purposeful rest period—such courses with rest periods being kept up until it was deemed that the patient had received sufficient therapy for his disease.

It was further brought out by these studies that it was not only the type of therapy but also the amount that was very important. Those patients with early syphilis did best who had received twenty or more injections of an arsenical and of a bismuth compound given in a continuous manner. Probably today one would even be inclined to place that figure at from thirty to forty of each. Under these conditions there was observed a more rapid disappearance of the clinical symptoms of the disease, the serologic positivity of the blood reversed to negative and "staid put" and there was less evidence of progression and far fewer relapse symptoms noted.

Unfortunately, these statistical data were based mostly on material under observation and treatment for from six months to one year. It is true that some of it was of even longer duration. While it may sound trite, it is difficult to gather a large amount of long time data on the treatment of early syphilis, and yet this is just what is needed to give valid conclusions. Patients have a tendency to lapse treatment, to move out of town or to another address and get lost, to be unfitted for statistical studies because of reactions to treatment or even to die. Moreover, even after the treatment is finished a long post-treatment observation is necessary if the data are to be of value. For that reason a recent report by Padgett⁵ from the

4. Stokes, J. H.; Usilton, Lida J.; Cole, H. N.; Moore, J. E.; O'Leary, Paul A.; Wile, Udo J.; Parran, Thomas, and McMullen, John: What Treatment in Early Syphilis Accomplishes, Ven. Dis. Inform. 15: 341 (Nov.) 1934.

5. Padgett, Paul: Long Term Results in the Treatment of Early Syphilis, J. A. M. A. 116: 7-11 (Jan. 4) 1941.

Johns Hopkins Clinic is like an oasis in the desert, since it has been possible for him to collect a fairly large group of treated syphilitic patients observed for a long period of time. Five hundred and fifty-one patients had been completely reexamined at least five years after the termination of two years of treatment. In fact, 273 had been followed for more than ten years. The mean of these followed from five to ten years was seven and six-tenths years and for the entire group ten and eight-tenths years.

Cure was defined as proved by reinfection or by absence of all signs and symptoms of syphilis after careful examination, including repeatedly negative serologic reactions and normal cerebrospinal fluid and cardiovascular conditions. Sixty-six per cent of these patients came up to these requirements, and a further 15 per cent were completely free of the disease except for a positive serologic reaction. Around 12 per cent of the patients had some form of neurosyphilis and another 7 per cent some form of other late manifestations.

One of the striking results of this study was that of a group of 273 patients examined at the ten year period 268 had been examined also at the five year period, and 179 were classified as cured. Strikingly enough, at the ten year examination none of these 179 had a relapse or progression of the disease. In fact 11 other patients diagnosed at the five year mark as having latent or late syphilis had gone on to cure at the ten year mark—three of them even without treatment. In other words, this careful survey establishes pretty well the important fact of the permanence of a five year cure in early syphilis. This is a valuable finding and interests every physician.

Among other points standing out in this study are the following:

In the group of patients not cured there was two and one-half times as much neurosyphilis among the whites as among the Negroes.

Cardiovascular syphilis, as usual, was more frequent among the Negro patients.

Pregnancy apparently exerts a beneficial effect on syphilis, as has been shown before.

The question now arises What group of syphilitic patients achieved the best results? The best outcome, 82 per cent of cures, was found in the group in which the diagnosis had been made early—in the seronegative primary phase of the disease. The poorest outcome was found in the group in which treatment was not started until the seropositive primary phase, as only 55 per cent of these patients were cured. Cures occurred in 69 per cent of patients with secondary syphilis when the patient had been able to build up some of his own immune powers and in 59 per cent of patients with latent syphilis. Neurosyphilis was two and one-half times as frequent among those patients on whom treatment was begun in the seropositive primary phase of the disease. As in other stages of syphilis, relapse played an important role here, for there were three times as many cures among those patients who did not have a relapse as among those who did. Moreover, neurosyphilis was encountered six times as often in the latter group. Relapses should be prevented in patients with early syphilis if possible.

What was the result as to system of treatment employed? Cures occurred in 83 per cent when con-

tinuous treatment, as contrasted to intermittent or irregular treatment, was employed in the first six months of the disease, and this was raised to 90 per cent if later treatment was also continuous. On the other hand, with irregular or intermittent treatment in the first six months, cures occurred in but 54 per cent, and this was not altered if the same plan was continued. Yet if the irregular treatment was changed to continuous in the second six months cures rose from 53 per cent to 73 per cent, while cures in the group given continuous treatment the first six months fell from 83 per cent to 75 per cent with irregular treatment the last six months.

Padgett also found that arsphenamine played a great role in the cure of syphilis, for "cure" rose from 35 per cent among 17 patients who never had any treatment to two thirds of those who received from ten to twelve injections, and lastly to 82 per cent among those who had more than twenty injections of arsphenamine. Moreover, the cure depended not only on the number of injections of the arsenical but inversely on the time span in which they were given. Those cases did better in which the arsenical was, within limits, given in a shorter period of time. In other words, in every suspected lesion on the genitalia, or other parts of the body for that matter, the physician should immediately institute repeated dark field examinations. One negative result does not rule out syphilis any more than one swallow makes a summer. If humanly possible, the diagnosis should be made by dark field examination rather than await a positive serologic reaction. It means all the difference between 82 per cent cures and 55 per cent cures, with the added two and one-half times as much neurosyphilis in the uncured seropositive primary group.

CONCLUSIONS

A safe, short cure for early syphilis is greatly needed. This would obviate lapses in treatment, infectious relapses and uncured syphilis. Until such a time as such a cure has been found and carefully checked, it is advisable to rely on slower but time tested and proved methods. This survey of Padgett's brings out several salient features.

1. If possible, the diagnosis in early syphilis should be made by the dark field examination; it must be remembered that one test does not rule out syphilis. If indicated, daily examinations are in order.

2. The outcome in early syphilis depends not only on the number of arsenical injections but also on the "time space" in which they are given.

3. The treatment in uncomplicated cases should run somewhat as follows:

Twelve injections of an arsenical.
Six weekly injections of bismuth subsalicylate.
Ten injections of an arsenical.
Eight injections of bismuth subsalicylate.
Ten injections of an arsenical.
Ten injections of bismuth subsalicylate.
Eight injections of an arsenical.
Twelve injections of bismuth subsalicylate.

4. The first three injections of the arsenical should be given three days apart, thereafter, with neoarsphenamine or arsphenamine, once a week, with mapharsen every five days. With the last arsenical

in a course the first injection of a bismuth compound should be given.

5. There will be 90 per cent plus cures if the diagnosis is made in the seronegative primary phase and if the treatment is of the continuous, overlapping type and consists of forty injections of an arsenical and of a bismuth compound.

1422 Euclid Avenue.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING CHAPTER, WHICH IS THE NINTH OF A SERIES ON AMPUTATIONS AND ARTIFICIAL LIMBS TO APPEAR IN THIS COLUMN. WHEN COMPLETED, THE SERIES WILL BE PUBLISHED IN THE FORM OF A HANDBOOK ON AMPUTATIONS. THE COUNCIL WISHES TO EXPRESS ITS APPRECIATION FOR THE COOPERATION OF ITS GROUP OF CONSULTANTS ON ARTIFICIAL LIMBS. THE COUNCIL IS REPRESENTED BY DR. FRANK D. DICKSON, HARRY E. MOCK, FRANK R. OBER, S. PERRY ROGERS, PAUL STEELE AND PHILIP WILSON, AND THE ASSOCIATION OF LIMB MANUFACTURERS OF AMERICA IS REPRESENTED BY MESSRS. MCCARTHY HANGER SR., W. E. ISLE, JOSEPH A. SPIEVAK, DAVID E. STOLPE AND J. B. KORRADY.

HOWARD A. CARTER, Secretary.

CHAPTER IV. AMPUTATIONS IN DIABETES MELLITUS AND PERIPHERAL VASCULAR DISEASE

CLASSIFICATION OF PATIENTS

For practical purposes the conditions to be dealt with in this discussion may be grouped under three headings: (1) thromboangiitis obliterans, (2) arteriosclerosis without diabetes and (3) arteriosclerosis with diabetes. The principles involved in amputations in this entire group of patients vary somewhat from those involved in amputation in patients with normal peripheral circulation. Furthermore, the indications for operation and the problems involved in the care of patients with thromboangiitis obliterans are at such variance from those involved in the management of the group with arteriosclerotic gangrene that they must be considered separately.

The patient with arteriosclerotic gangrene with or without diabetes is usually 50 or more years of age, may be either male or female, will have other evidences of widespread arteriosclerosis, and in most instances will not be economically self supporting after the loss of a limb. The incidence of gangrene of the remaining foot is great.¹ Moreover, in the presence of diabetes the hazards of diabetic complications as well as the increased hazard of infection have resulted in a mortality following amputation which in the country at large varies from 13 to approximately 80 per cent.

Thromboangiitis obliterans, on the other hand, occurs in young men. Only rarely is it found in patients beyond 50 years of age, and it is most commonly seen in patients under 40. Women are practically exempt from the disease. Its etiology is unknown. It involves both veins and arteries. It usually begins in one lower extremity, may involve all four extremities, and not infrequently affects the coronary, cerebral, mesenteric or other vessels. The danger from infection in this group of patients is extremely slight. These men are in the wage earning age, and rehabilitation to a position of economic stability is of the greatest importance.

1. Forty in a group of 100 consecutive diabetic patients who had had amputation of one leg for gangrene developed gangrene of the other leg which resulted in amputation or death.

PREVENTION OF GANGRENE

While much can be done to prevent the actual onset of gangrene in all patients with peripheral arterial disease, a great deal more can be done for patients with thromboangiitis obliterans than for patients with arteriosclerosis. Extreme care in the hygiene of the feet is essential to all patients. Daily washing of the feet with soap and water, gentle wiping to avoid injury to the skin, paring of the nails only after a footsoak when the nails are softer rather than brittle, and avoidance of any injury to the cuticle; careful selection of new shoes to avoid pressure areas, proper treatment of corns and calluses (whenever possible by a trained chiropodist who understands the significance of diabetes or diminished circulation), and extreme care in avoiding anything which may cause a blister on the foot will do much to prevent the onset of gangrene in any of these patients.

The patient with thromboangiitis obliterans should be absolutely prohibited from smoking. Theoretically no patient with peripheral arterial disease should be allowed to smoke. Practically, the older patients with arteriosclerotic gangrene show so little vasoconstriction that in most instances what is gained by the cessation of smoking is not sufficient to warrant the hardship which this brings to many of these older patients.

To any patient with impending gangrene, excessive heat may be harmful. No patient with diabetes should ever be advised to apply heat to his foot. Many of these patients have disturbances of sensation, and burns of varying severity frequently result. Any burn on the foot of a diabetic patient is considered serious and may result in an amputation. It must also be remembered that the older patients with long-standing diabetes have difficulty with their eyes and are themselves not able to detect minor lesions on their feet. These patients should have their feet inspected regularly by some responsible member of the family.

ANESTHESIA

From 50 to 75 mg. of procaine hydrochloride injected into the spinal canal in the third or fourth lumbar space has proved an excellent form of anesthesia for the group of patients with arteriosclerotic gangrene with or without diabetes. The level of anesthesia can and should be kept below the level of the iliac crest. There is relatively little effect on the blood pressure if the anesthesia goes no higher than this. There will be complete muscular relaxation, and operation can be done with a minimum of trauma. Chloroform or avertin with amylene hydrate is too dangerous for these patients, and it is probably easier to learn to give a safe low spinal than a safe inhalation anesthesia of any of the gases. Ether should not be used for amputation on a patient with diabetes mellitus.

PRINCIPLES OF AMPUTATION

The technical principles involved in amputation for peripheral arterial disease are the same in all groups and, as already stated, may be at variance to those which obtain among patients whose circulation is adequate and who do not have diabetes. Early, complete and permanent healing takes precedence over the location of the scar and other details which result in the ideal

stump. Experience has shown that adherence to the following principles will give the best results, both immediate and remote. It will be noted that these principles are based primarily on two objectives: (1) preservation of the arterial supply and (2) avoidance of infection. They may be enumerated as follows:

1. Amputation must be done at a level which has adequate blood supply to insure healing. The arterial flow may be through collateral rather than main channels.

2. A circular incision is used except in the Gritti-Stokes amputation, which requires a longer anterior flap.

3. A tourniquet is never used except in a guillotine amputation.

4. While the field of operation should be carefully prepared as for any surgical procedure, the level of preparation should never approximate the involved area, and under no conditions should it extend more than 2 inches below the level of the proposed incision.

5. Great care should be taken in the manipulation of tissues. Incisions should be clean and decisive. A sponge or an instrument which has touched the skin should never be allowed to touch the inside of the wound. A sponge is used once and discarded. If the proper operation has been selected and the operation has been done at the proper time, any infection of the wound will come by contamination from the skin and be secondary to the manipulation of operation.

6. Sutures should be as fine as is consistent with the responsibility placed on them. No. 1 chromic catgut is desirable for the major vessels. No. 3 silk or 000 catgut may be used for the smaller vessels in the muscle and subcutaneous tissues. No. 5 silk or 00 chromic catgut may be used for the fascia. Heavier sutures than these are not necessary and may be injurious. For the surgeon not accustomed to silk technic, catgut is strongly advised.

7. Careful closure is of utmost importance. A few sutures are taken in the muscle; the fascia is closed with the same care as is used in the closure of an abdominal wound. There should be no dead space. The fascial edges should be approximated without undue tension. If the operation has been properly executed there will be no collection of serum. There is therefore no indication for drainage. A drain will merely act as a foreign body, invite infection and occasionally result in the loss of a stump. Carefully placed interrupted silk sutures are used for the skin. The skin edges should be carefully everted so that healing by first intention may result.

The nerves and blood vessels are clamped separately. It is not necessary to separate the artery from the vein, even in the larger vessels such as the popliteal. We prefer to crush, tie and cauterize the end of the nerve rather than to inject alcohol, particularly in a lower leg or Gritti-Stokes amputation, because of the necrosis that may follow the spilling of a small amount of alcohol in the more superficial structures.

INDICATIONS FOR MAJOR AMPUTATION

For the man who does only an occasional amputation for arteriosclerotic gangrene with or without diabetes, one of two amputations is advised: either (1) a guillotine amputation, usually below the knee, or (2)

a closed supracondylar amputation. For the surgeon whose experience justifies the selection of a more complicated operation, closed amputation through the lower leg or a Gritti-Stokes amputation may be indicated.

Guillotine Amputation.—This is indicated for those patients for whom a primary closed amputation would in the judgment of the operator be hazardous. Obviously, the specific indications will vary somewhat with the experience of the surgeon. It should be done (1) for all patients with a septicemia secondary to a gangrenous foot, (2) for extending infection in spite of the usual treatment with moist heat and chemotherapy, (3) in the presence of extensive sepsis extending so high as to make a closed amputation unsafe, (4) for a seriously ill or markedly debilitated patient with extensive local sepsis when it is advisable to remove the mass of local infection to facilitate restitution of the patient to more normal physical condition, and (5) for any patient when in the experience of the surgeon there is uncertainty as to the safety of primary closed amputation.

With but rare exceptions this amputation should be done through the upper third of the lower leg and should be followed, when conditions permit, by a closed supracondylar amputation. All structures are cut in one plane. Preferably, if the extent of actual suppuration is not too high, the incision should be made just below the fleshy part of the calf. There should be no hesitation in doing this amputation through active lymphangitis. It may also be done through suppuration if additional drainage is given, opening widely any extensions to a higher level, provided of course the suppuration has not extended into or above the level of the knee joint. A tourniquet is used in these cases to permit a rapid operation because of the generally poor condition of the patient, because of the presence of extensive local sepsis and the corresponding desire to lessen the local manipulation, and because a subsequent thrombosis which might occur secondary to the use of a tourniquet is of less consequence in this type of operation than it would be in a primary closed procedure. All vessels are tied with catgut. A sterile boric acid ointment dressing is applied to the end of the stump and a large comfortable dressing with the knee joint immobilized by a posterior splint is then applied. It is not necessary to change the dressing oftener than every four or five days. If the response is satisfactory, the patient's temperature will drop to normal or near normal and remain at a satisfactory level. The secondary amputation is done in from ten days' to three weeks' time, depending on the general condition of the patient. Skin grafting or attempts to utilize this stump are advised only in the very rare instance.

Supracondylar Amputation.—A supracondylar amputation by means of a circular incision, with the level of the skin incision at the upper margin of the patella, is the simplest and safest closed amputation that can be done. It is indicated (1) for a condition permitting primary closure but requiring the shortest and safest operation, (2) for all patients with physical handicaps which would prevent subsequent use of an artificial limb, (3) for extensive infection, which makes lower amputation unsafe, (4) in gangrene of one half or more of a toe in the absence of pulsation in the dorsalis pedis.

artery or (5) for pain with or without gangrene which does not respond to three weeks of careful hospital treatment.

A circular incision is used, going through the quadriceps tendon and opening into the knee joint just above the patella. After the skin incision is made, the amputation knife is changed or is wiped off with an alcohol sponge. The incision is then carried through the muscles medially, laterally and posteriorly. If the leg is elevated and the hamstrings are put on the stretch and then divided, they will retract. The nerve will be readily seen near the midline and should be clamped before it is divided to facilitate its later identification. With careful dissection the popliteal vessels are then found in the loose areolar tissue just deep to the nerve. These are divided between clamps and the remainder of the procedure is readily accomplished. The bone is divided at a distance above the level of the skin incision which equals approximately half of the diameter of the thigh at the level of operation. After treatment of the nerve and vessels, as already described, closure is done in an anteroposterior direction. Some care is necessary to place the femur in the midportion of the stump because of the unequal muscle balance in the lower thigh due to the more powerful adductor group.

Closed Amputation Through the Lower Leg.—This operation is restricted to a very select group of patients. It requires more technical skill and more local manipulation than a supracondylar amputation. It is done through a level at which the circulation is less adequate and where the incision is closer to the field of infection. It should not be done by the surgeon inexperienced in amputations; it should not be done for a patient whose general condition would contraindicate the use of an artificial limb. It can usually be done successfully when a patient is in good general physical condition, provided (1) there is good pulsation in the popliteal artery, (2) the skin at the level of the incision is in good condition, (3) there is no elevation of temperature or color change above the ankle and (4) there is no evidence of infection in the lymphatics or veins above the level of the malleoli.

The circular incision is not entirely practical in an amputation through the upper third of the lower leg. Extension of the incision upward along the course of the fibula for a distance of about 2 inches will greatly facilitate the procedure and will interfere with the circulation little if at all. The same principles of operation are carried out as described for the supracondylar amputation. A posterior splint should always be applied at the completion of the operation.

Gritti-Stokes Amputation.—This operation should not be done for a patient with diabetes or in senile gangrene unless the surgeon has had experience with it. It gives an excellent stump provided the limb maker is favorably inclined toward the resultant stump and utilizes the end bearing which it is capable of giving. It does not have sufficient advantages over a supracondylar amputation for these elderly patients to compensate for the increased technical difficulty. It has the same requirements as an amputation through the lower leg except that good collateral circulation around the knee joint may be of more advantage than pulsation in the main vessels. It is particularly useful for a heavy man who will be on his feet for long periods at a time.

THROMBOANGIITIS OBLITERANS

The patient with thromboangiitis obliterans will be a young or a middle aged man. He has largely within his power the ability to control progression of his disease by the cessation of all smoking and the acceptance of the general principles of good living. About the only indication for a major amputation in this condition is failure of a foot to heal after removal of one or more digits. The details of the local care of the thromboangiitis patient with gangrene of one or more toes cannot be entered into in this discussion but warrant careful review by the surgeon having such a patient under his care.

Should major amputation be indicated for the patient with thromboangiitis obliterans, there is some difference of opinion as to whether it should be done through the upper third of the lower leg or whether the patient should have a Gritti-Stokes amputation. Only rarely is it necessary to do a supracondylar amputation in this group of patients. Many men of experience prefer the Gritti-Stokes amputation in any patient with thromboangiitis obliterans who has not responded to the usual local procedure.

ARTIFICIAL LIMBS

Many patients with arteriosclerotic gangrene, particularly in the presence of diabetes, will never use an artificial limb. This is because of some general handicap such as a previous cerebral hemorrhage, failing eyesight or poor general physical condition. The final ability of any of these patients to walk, however, will depend on the use of a temporary pylon during their hospital convalescence. The patient with a closed supracondylar amputation or with a Gritti-Stokes amputation which has healed promptly should be able to begin walking with a pylon during the third week after operation and should be ready for discharge approximately three weeks after the date of operation with sufficient experience in the use of the apparatus to permit him to carry on satisfactorily at home. If these older patients become accustomed to the use of crutches for weeks or months following the amputation, many will never walk who, if given the opportunity of earlier trial, would do well with an artificial limb. A rigid type of pylon, made either from plaster or with a leather bucket, is the safest and easiest for the older patients to manipulate.

If the patient has had an amputation through the lower leg, the early use of the pylon is not so important. If knee exercises are given and the knee is completely extended and flexed so that there is no contraction, these patients will all walk well if given an opportunity at a later time. In this older group it is not safe to apply the pressure necessary to support the patient's weight on a lower leg stump in less than five weeks from the time of the operation.

The time at which the patient will change from a temporary to a permanent type of artificial limb will depend on the progress he has made in walking with the simpler peg type of appliance and also on the rapidity with which the stump shrinks. It is fair to say that if any of these older patients are not able to walk on the temporary type of limb there is no justification for the expense involved in trying the more complicated permanent limb.

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SATURDAY, SEPTEMBER 27, 1941

NONCOMMUNICABLE STREPTOCOCCI

Detailed studies of a recent institutional epidemic have led Coburn and Pauli¹ of Columbia University to propose an entirely new theory of infectivity with streptococci which may well prove to be of epidemiologic importance.

The epidemic began in the infants' ward of a New York hospital at a time when streptococcal infections of the upper respiratory tract were at their lowest seasonal ebb. The original source of the outbreak was apparently a 7 months old baby, admitted for pancreatic disease, but who after admission was found to have a progressive bronchitis; sputum and throat cultures showed a preponderance of type 12 hemolytic streptococci. At the time of this discovery all other patients, nurses and institutional personnel were clinically free from hemolytic streptococci. Following his admission three other infants developed type 12 streptococcus infections, and soon afterward seven nurses who cared for these infants acquired "sore throat," pyrexia and intense systemic symptoms, the throat flora of each nurse containing a preponderance of the type 12 organisms. The epidemic lasted about two months, during which time 13 children, 22 nurses, 2 doctors and 1 visitor to the children's ward were infected.

Meticulous epidemiologic and bacteriologic studies were made of this outbreak, the most striking observation being the evident difference between adult and infantile capacity to communicate the disease. The infected nurses did not communicate the infection to their associates in the nurses' home. After recovery, these nurses resumed their duties in other wards of the hospital. Although many of them remained throat carriers of type 12 hemolytic streptococci for months, none of them gave rise to a streptococcal infection in either infants or adults. In contrast with this finding, spread of the infection from infants was apparently uncontrollable, type 12 organisms from these children

apparently having a striking capacity to colonize on the mucous membranes and skin of both children and adults. There is evidently an increased infectivity of streptococci following their establishment in the tissues of infants and children, or conceivably the opposite phenomenon, a loss of infectivity as a result of contact with adult tissues.

A key to the nature of this age differential was furnished by repeated failure to recover type 12 organisms from infants who were evidently spreading the infection. These infants had nonhemolytic streptococci in their throats, apparently indistinguishable from the normal throat flora. On repeated subculture in blood broth, however, these presumptive nonhemolytic organisms "dissociated" or mutated, giving rise to typical type 12 hemolytic colonies. Apparently type 12 organisms often exist as nonhemolytic variants in infant tissues, which variants are not demonstrable in the adult. Confirming this conclusion, it was found that type 12 organisms recently isolated from both children and adults showed a tendency to "dissociate," giving rise to atypical forms when cultivated in normal infant serum. The same organisms remained stabilized and developed only typical type 12 colonies when grown in adult serum.

Communicability is thus apparently a function of the "physiologic liability" of the organisms, or their tendency or capacity to develop new and presumably adaptive variants. In infant tissues this tendency is apparently increased or, at least, is not suppressed. In adult tissues microbic liability is apparently suppressed, the streptococci being stabilized in a typical but relatively noncommunicable form. There are hints in the literature that a similar age factor plays a part in *Hemophilus influenzae*² and pneumococcal³ infections.

Coburn and Pauli emphasize the differences in the clinical picture in the different age groups. The infected adults all contracted pyrexia and had strongly positive throat cultures for weeks or months but escaped septic complications. Most of them developed relatively high titer antistreptolysins. The children showed little or no febrile reaction. Many of them acquired otitis media, skin infections or other septic complications. Few if any type 12 organisms were found in their throats or noses at a time when epidemiologic data indicated that they were spreading the contagion. Antibody formation was about 20 per cent of that in the adult.

Briefly summarized, their epidemiologic data indicate that streptococcal communicability is a function of the liability or adaptability of the micro-organisms, which liability is inhibited or suppressed by the "mature" antibodies of the adult, rendering the stabilized adult infections relatively noncommunicable.

1. Coburn, Alvin F., and Pauli, Ruth H.: *J. Exper. Med.* 73: 551 (April) 1941.

2. Dochez, A. R.; Mills, K. C., and Kneeland, Yale, Jr.: *Proc. Soc. Exper. Biol. & Med.* 30: 314 (Dec.) 1932.

3. Eaton, M. D.: *J. Bact.* 27: 271 (March) 1934.

DURAN-REYNALS "SPREADING FACTOR"

In 1928 Duran-Reynals¹ of the Rockefeller Institute reported that extracts of normal rabbit testicle added to an injection fluid will greatly facilitate the spread of vaccine virus through dermal tissues and enhance to an extraordinary degree its infectivity and pathogenicity. Later a similar increase in toxicity or pathogenicity was demonstrated on adding testicular extract to diphtheria toxin or to a suspension of *Staphylococcus aureus*. Accelerated intradermal spread was also demonstrated with carbon particles. The increased dermal permeability apparently does not depend on any active vascular or nervous response, since increased diffusion occurs in excised skin and even in desiccated skin subsequently soaked in water.²

This "spreading factor" is of teleologic importance. It was extracted from semen, leech extract, bee sting and snake venom, with evidence that the seminal extract facilitates the migration and penetration of spermatozoa. Clinical interest in this synergic extract was enhanced by the discovery that the same or a similar "spreading factor" is formed by certain bacteria (e. g. *Clostridium welchii*), although most bacteria are free from this tissue aggrassin.

A key to the probable method of action of testicular extract has been recently found by Chain and Duthie³ of Oxford University, who report that substances containing the spreading factor will decrease the viscosity of synovial fluid and of vitreous humor in vitro, with the liberation of reducing substances. This observation suggests that the "spreading factor" is a "mucolysine," depolymerizing and hydrolysing the mucopolysaccharides of these viscous fluids. A viscous mucopolysaccharide has been recently isolated from synovial fluid and designated "hyaluronic acid." The active principle of testicular extract, therefore, is tentatively classified as a "hyaluronidase."

Hyaluronidases can be readily titrated by measuring the rate of decrease of viscosity of pure hyaluronic acid solutions. On applying this technic the English biochemists found that there is a strict correlation between hyaluronidase titer and spreading reaction in animal tissues. Meyer and his colleagues⁴ of Columbia University have confirmed this observation but point out that some evidence suggests that hyaluronidase and the "spreading factor" are not identical, and they believe that several factors may be involved in the production of the spreading phenomenon.

The conclusion that the "spreading factor" is a mucolysine is equivalent to the assumption that a viscous substance chemically identical with synovial mucopolysaccharide is present in intercellular tissue spaces. This

assumption is supported by the successful isolation of a highly viscous mucopolysaccharide from excised skin,⁵ and proof that this dermal polysaccharide is rapidly depolymerized with loss of viscosity in the presence of testicular extract. The existence of an intercellular mucin of sufficient viscosity to prevent the spread of colloidal dyes or formed particles is also suggested by the ingenious studies of the hydrodynamics of interstitial tissue spaces recently reported by McMasters⁶ of the Rockefeller Institute.

The demonstration of a mucin barrier interfering with intercellular drainage may be an important contribution to basic physiologic theory. It is one of the tragedies of the present war that such a promising line of investigation has been discontinued at Oxford University.

DIETARY HEALING OF DENTAL CARIES

Sognnaes,¹ of the Department of Pathology, University of Rochester School of Medicine and Dentistry, reports that under certain favorable dietary conditions experimental dental caries in rats may be completely healed, with restoration of practically normal tooth structure. About ten years ago Hoppert and his co-workers,² of the Department of Chemistry, Michigan State College, showed that dental caries can be regularly produced in rats by feeding certain coarse corn rations. The stock ration in the Michigan State laboratory consisted of finely ground (60 mesh) yellow corn (60 parts), whole milk powder (30 parts), linseed meal (6 parts), alfalfa meal (3 parts) and sodium chloride (1 part). Many years' experience has shown that this ration is fully adequate for optimal maintenance in rats and that with its use dental caries practically never develops. When coarse corn meal was substituted for the finely ground corn in this mixture, however, progressive dental decay was initiated in the lower molars of practically all rats. Well developed cavities were demonstrable in about eight weeks. By the end of six months nearly all of the lower molar teeth showed extensive cavity formation. Examination of the teeth at an earlier stage showed frequent impaction of coarse corn particles in the lower molars, the subsequent tooth decay being presumably the result of the local action of acidogenic bacteria. This conclusion was interesting at the time, since it emphasized the importance of physical properties of the diet as contrasted with the minerals, vitamins and other chemical factors then overemphasized.

On repeating these experiments in the University of Rochester School of Medicine and Dentistry, Sognnaes produced severe dental caries in several groups of rats by the use of a similar coarse corn ratio. Animals

1. Duran-Reynals, Francesc: *Compt. rend. Soc. de biol.* **99**: 6, 1928; *J. Exper. Med.* **50**: 327 (Sept.) 1929.

2. McClean, Douglas: *J. Path. & Bact.* **34**: 459 (July) 1931.

3. Chain, E., and Duthie, E. S.: *Nature*, London **144**: 977 (Dec. 9) 1939.

4. Meyer, Karl; Hobby, Gladys L.; Chaffere, Eleanor, and Dawson, M. H.: *Proc. Soc. E per. Biol. & Med.* **44**: 294 (May) 1940.

5. Chain and Duthie.³ Meyer, Hobby, Chaffere and Dawson.⁴

6. McMaster, P. D.: *J. Exper. Med.* **74**: 9 (July) 1941.

1. Sognnaes, R. F.: *Science* **93**: 617 (June 27) 1941.

2. Hoppert, C. A.; Webber, P. A., and Canniff, T. L.: *Science* **74**: 77 (July 17) 1931.

killed at the end of one hundred days showed numerous carious disintegrations of the lower molar teeth, often with deep penetration, the cavity base being in close proximity to the pulp chamber. The lesion was evidently progressive, almost complete destruction of the lower molar teeth often taking place if the caries-producing diet was continued for from six to eight months.

Instead of all groups of carious rats being killed at the end of one hundred days, certain groups were then returned to their routine noncarious stock diet (finely ground fox chow). By the end of two months the previously recorded carious process was not only arrested but in many cases almost completely repaired. Under binocular examination the exposed dentin was found covered by a thick layer of secondary dentin more or less completely filling the earlier cavity. In some cases there was a perfect restoration of the original thickness, hardness and dental polish.

These observations offer a new experimental approach to the microscopic study of reparative processes in carious teeth. If an equally efficient regenerative process can be demonstrated or promoted by proper dental hygiene in man, Sognnaes's observation may well initiate a new era in practical dental prophylaxis and therapy.

Current Comment

CONSERVATION OF VISION

Organized efforts at control of trachoma are conducted by the Office of Indian Affairs and by five state programs. A recent report of the Committee on Conservation of Vision¹ points out that the results of treatment with sulfanilamide are encouraging although uniformly good results in all cases are not achieved by this means. After reviewing the various activities the report recommends in part that programs under way be continued until complete eradication of trachoma has been accomplished, that states in which the program does not include all affected areas and groups extend the services as needed, that program directors work toward uniformity of recording and reporting essential facts and that provisions be included in the trachoma diagnostic service for diagnosis of other serious eye defects. The portion of the report on eye health and protection in the defense program is devoted to a brief evaluation of deficiency diseases of the eye, defective vision among draftees, health services for national youth administration, expansion of venereal disease service as a prevention of blindness measure, physical examinations in industry, occupational eye diseases due to exposure to poisons, and exposure of the civil population in modern warfare. These main divisions are accompanied by brief discussions and a moderately extensive bibliography. The organized attempt to conserve vision is already showing signs of real effectiveness.

1. Report of the Committee on Conservation of Vision to the State and Provincial Health Authorities of North America, Washington, D. C., May 1941.

EFFICIENCY OF GAUZE MASKS

The experience in army camps and on shipboard during the first World War and the present possibility of pneumonia and epidemic meningitis in our army camps lend importance to a recent study¹ on the efficiency of hospital masks. In this investigation a series of fabrics and other filtering materials was subjected to quantitative evaluation with respect to resistance to air flow and also efficiency in filtering bacteria from the air passing through them. As might be expected, excellence in both directions was not necessarily shown for the various filtering materials. For instance, one layer of virgin wool flannel having forty-two by forty-two strands per inch and washed fifty times removed 100 per cent of the bacteria but possessed such a high resistance to air flow that its use is not practical. On the other hand, two layers of gauze forty-two by forty-two strands per inch showed a very low relative air resistance but filtered out only 74 per cent of the organisms. Again, cellucotton showed a very high filtering efficiency but there are certain disadvantages in its use. The Iowa group of investigators found that repeated laundering so changes the structure of ordinary cotton gauze that it becomes a good bacterial filtering material; they showed that six layers of gauze which had been laundered twenty times removes 97 per cent of the organisms and, at the same time, has a relatively low resistance to air flow. These observations will be of interest to the surgeon in the light of attempts to sterilize the air of operating rooms in the presence of the noses and throats of the operating team and gallery, which are potential sources of infection.

CONGRESS APPROPRIATES FOR NEW ARMY MEDICAL LIBRARY AND MUSEUM

On September 15 the Congress of the United States completed legislative action on a bill authorizing the War Department to purchase for \$1,000,000 a site near the Folger Shakespearean Library for a new Army Medical Library and Museum to cost \$3,750,000. Thus begins the final stage in the culmination of a project for which American medicine has been active for a good many years. Even approximate estimates calculate that the material now available in the Army Medical Library and Museum is worth at least \$25,000,000 and could not possibly be replaced even at that price. The building in which the material now rests is a fire hazard of extraordinary character and so long has been that the mind of man cannot remember even the date when it first became unsuited to its purpose. It is hoped that the planning and construction of the new building will not be delayed a moment longer than is necessary, even by the intensity of the preparedness program. Indeed, if any question of priorities arises in relation to the construction of this project, the office concerned with that problem will do well to get action as quickly as possible. The invaluable material in the Army Medical Library is the very basis of much of the scientific work absolutely necessary to military efficiency.

1. Rooks, R.; Cralley, L. J., and Barnes, M. E. *Pub. Health* 56:1411 (Jul. 11) 1941.

MEDICAL PREPAREDNESS

In this section of The Journal each week will appear official notices by the Committee on Medical Preparedness of the American Medical Association, announcements by the Surgeon Generals of the Army, Navy and Public Health Service, and other governmental agencies dealing with medical preparedness, and such other information and announcements as will be useful to the medical profession.

ARMY RESERVE OFFICERS ORDERED TO ACTIVE DUTY WAR DEPARTMENT

The following additional medical reserve corps officers have been ordered to extended active duty by the War Department, Washington, D C :

ANDERSON, Robert D 1st Lieut, Buffalo
BERMAN, Lawrence, 1st Lieut, Detroit
COOLEY, Fred Everett, Jr, 1st Lieut, Dinuba, Calif
DICKERMAN, Henry Street, Jr, 1st Lieut, Springfield, Ill
FISIKIN, Ben Gerald 1st Lieut, Chicago
FORSYTH, James Edward, 1st Lieut, Albion, Mich
GREENFIELD, Jack, 1st Lieut, Cleveland
HAMMEREL, John Joseph, 1st Lieut, Billings, Mont
JANDORI, R, Donald, 1st Lieut, Baltimore

LAMBERT, Edward R, 1st Lieut, Santa Barbara, Calif
LINDNER, Harold Handel, Captain, San Francisco
MARIANS, Abraham, 1st Lieut, San Gabriel, Calif
MARSHALL, Frederic Simon, 1st Lieut, Black Earth, Wis
MATT, Wayland Paul, 1st Lieut, Portland, Ore
McRAE, James Hendry, 1st Lieut, Detroit
MITRICK, Joseph Martin, 1st Lieut, Chicago
MUNAL, Harold Dean Jr, 1st Lieut, Fresno, Calif
QUASHNOCK, Joseph Matthew, 1st Lieut, Pittsburgh
QUINN, Gerald William, 1st Lieut, Akron, Ohio
RANDOLPH, Angus Crawford, 1st Lieut, Lynchburg, Va
SANDLER, Nathaniel, 1st Lieut, Detroit
STEINBOCK, Henry Fred, 1st Lieut, Villa Park, Ill
WEST, Leonard A, Major, Bay Pines, Fla

SECOND CORPS AREA

The following additional medical reserve corps officers have been ordered to active duty by the Commanding General, Second Corps Area, which comprises the states of New York, New Jersey and Delaware :

AIBANO, Frank J, 1st Lieut, Newark, N J, Fort Jackson, S C
COHN, Herman R, 1st Lieut, Brooklyn, Pine Camp, N Y
DeMARCO, Mario M, 1st Lieut, New York, Camp Selby, Miss
GERSTEIN, Jerome W, 1st Lieut, Brooklyn, Induction Station, Newark, N J
GREINER, George F, 1st Lieut, Jersey City, N J, Fort Dix, N J
KATZ, Simon, 1st Lieut, Brooklyn, Pine Camp, N Y
LEHMAN, David J, 1st Lieut, West Orange, N J, Fort Dix, N J
MARKS, Stuart B, 1st Lieut, Syracuse, N Y, Fort Dix, N Y
McMAHON, Thomas A, Jr, 1st Lieut, St Albans, L I, N Y, Fort Monmouth, N J

MOON, Dabney Von K, 1st Lieut, Plainfield, N J, Induction Station, Fort Jay, N Y
SCHELL, Philip M, 1st Lieut, Baldwin, L I, N Y, Induction Station, Fort Jay, N Y
SCHWARTZTARB, Samuel, 1st Lieut, New York, Induction Station, Fort Jay, N Y
SEIDEMAN, Thomas, 1st Lieut, Brooklyn, Induction Station, Fort Jay, N Y
SPOTA, George, 1st Lieut, New York, Pine Camp, N Y
TOWLEN, Leonard J, 1st Lieut, New York, Induction Station, Fort Jay, N Y
WEINER, Leo, 1st Lieut, Brooklyn, Induction Station, Fort Jay, N Y
WEINTROB, Joseph, 1st Lieut, Atlantic City, N J, Induction Station, Fort Jay, N Y
ZEILENGOLD, Milton, 1st Lieut, New York, Pine Camp, N Y

SIXTH CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Sixth Corps Area, which comprises the states of Wisconsin, Michigan and Illinois :

ARMALAVAGE, Leon J, 1st Lieut, Chicago, 1608th Corps Area Service Unit, Camp Grant, Ill
BROWN, Arthur William, 1st Lieut, Chicago, 135th Medical Regiment, Camp Shelby, Miss
CHOBOT, George R, 1st Lieut, Chicago, 135th Medical Reg, Camp Shelby, Miss
CORTESE, Lori Raynold, 1st Lieut, Chicago, 33d Division, Camp Forrest, Tenn
DVONCH, William J, 1st Lieut, Chicago, Station Complement, Fort Sheridan, Ill
FAHRNER, Richard H, 1st Lieut, Joliet, Ill, Camp Shelby, Miss
FORSYTH, James E, 1st Lieut, Albion, Mich, 1609th Corps Area Service Unit, Fort Custer, Mich
FREDERICKSON, Lynn C, 1st Lieut, Chicago, Armored Force Replacement Training Center, Fort Knox, Ky
GROSSMAN, Edward Stanley, 1st Lieut, Chicago, Headquarters and Station Complement, Corps Area Service Command, Camp Wheeler, Ga
GUSTAFSON, Joseph G, 1st Lieut, Moline, Ill, Rock Island Arsenal, Rock Island, Ill
HAMLIN, Courtney N, 1st Lieut, Rockford, Ill, 1608th Corps Area Service Unit (Medical Section), Camp Grant, Ill
HANSON, Martin F, 1st Lieut, Havana, Ill, 33d Division, Camp Forrest, Tenn
HELSS, Edmond R, 1st Lieut, Chicago 33d Division, Camp Forrest, Tenn
ILER, Rex L, 1st Lieut, St Anne, Ill, 135th Medical Regiment, Camp Shelby, Miss
JACOBS, Henry J, 1st Lieut, Spring Valley, Ill, 135th Medical Regiment, Camp Shelby, Miss
JENVINGS, Laurence S, 1st Lieut, Chicago, General Dispensary, Chicago
KOLB, Leonard H, 1st Lieut, Chicago, 135th Medical Regiment, Camp Shelby, Miss
LADEN, Edward L, 1st Lieut, Chicago 135th Medical Regiment, Camp Shelby, Miss

LEADER, Abel J, 1st Lieut, Chicago, 210th C A (AA), Fort Sheridan, Ill
LYNN, Harold P, 1st Lieut, Ypsilanti, Mich, 1609th Corps Area Service Unit, Fort Custer, Mich
MAKART, Carl D, 1st Lieut, Chicago, 33d Division, Camp Forrest, Tenn
MANNING, Morey, 1st Lieut, Detroit, 1609th Corps Area Service Unit, Fort Custer, Mich
MEYER, Harold I, Major, Chicago, 182d Field Artillery, Fort Leonard Wood, Mo
MITRICK, Joseph M, 1st Lieut, Chicago, 135th Medical Regiment, Camp Shelby, Miss
MONGFAU, Donald C, 1st Lieut, Chicago Fort Sheridan Ill
MURPHY, James P, 1st Lieut, Virden, Ill, 182d Field Artillery, Fort Leonard Wood, Mo
NELSON, Clayton E, 1st Lieut, Chicago, 1611th Corps Area Service Unit, Fort Sheridan Ill
NORRIS, Harold V, 1st Lieut, Jacksonville, Ill, 33d Division, Camp Forrest, Tenn
O'BRIEN, Donald Erwin, 1st Lieut, Chicago, 33d Division, Camp Forrest, Tenn
OLSON, Carl P, 1st Lieut, Rockford, Ill, U S Army Induction Station, Chicago
O'NEILL, Paul J, 1st Lieut, 420 Henry Street, Alton, Ill, 1623d Corps Area Service Unit Fort Sheridan, Ill
PFETTER, Isidore S, 1st Lieut, Elmhurst, Mich, 135th Medical Regiment, Camp Shelby, Miss
PORTE, David Morton, 1st Lieut, Chicago Camp Shelby, Miss
QUISLING, Gunnar D, 1st Lieut, Madison, Wis, 135th Medical Reg, Camp Shelby, Miss
RAICHART, William A, 1st Lieut, Berwyn, Ill, 33d Division, Camp Forrest, Tenn
REITMAN, Paul H, 1st Lieut, Chicago, 1607th Corps Area Service Unit, Fort Sheridan, Ill
ROYCE, Emery, 1st Lieut, Sparland, Ill, Rock Island Arsenal Rock Island, Ill
SAVAGE, John L, 1st Lieut, Evanston, Ill, 33d Division, Camp Forrest, Tenn
SCHNEIDER, Gerald E, 1st Lieut, Chicago Headquarters and Station Complement, Corps Area Service Command Camp Wheeler, Ga
SHOEMAKER, John Calvin, 1st Lieut, Vassar, Mich, Camp Shelby, Miss

SKOGMO, Bernhoff R, 1st Lieut, Milwaukee, 135th Medical Regiment, Camp Shelby, Miss
SMOLLAR, Leo, 1st Lieut, Chicago, 33d Division, Camp Forrest, Tenn
THUERER, George, 1st Lieut, Chicago, 135th Medical Regiment, Camp Shelby, Miss
VICKERY, Eugene L, 1st Lieut, Lena, Ill, 1608th Corps Area Service Unit, Camp Grant, Ill

WALTON, William Hester, 1st Lieut, Belleville, Ill, Reception Center, Scott Field, Ill.
WEINTRAUB, I Irving, 1st Lieut, East St Louis, Ill, 61st Corps Area (AA), Fort Sheridan, Ill
WIETERSEN, Fred K, 1st Lieut, Huntington Wood, Mich, U S Army Induction Station, Peoria, Ill
WINSAUER, Henry J, 1st Lieut, Kohler, Wis, 29th Division, Fort Meade, Md.

Orders Revoked

BAUER, Benedict James, 1st Lieut, Detroit, 30th Division, Fort Jackson, S C
DOUGHERTY, Roderick J, 1st Lieut, Chicago, 33d Division, Camp Forrest, Tenn
FINCH, F Sinclair, 1st Lieut, Armad, Mich, 33d Division, Camp Forrest, Tenn
FORSYTH, James Edward, 1st Lieut, Albion, Mich, 1609th Corps Area Service Unit (Recreation Center), Fort Custer, Mich
GANTZ, Hyman A, 1st Lieut, Waukesha, Wis, 33d Division, Camp Forrest, Tenn
GLUSTAFSON, Joseph G, 1st Lieut, Moline, Ill, R I Arsenal, Rock Island, Ill
HAUSMANN, Richard K, 1st Lieut, Waupun, Wis, 202d Corps Area (A A), Fort Bliss, Texas
KOZA, John L, 1st Lieut, Chicago, 135th Medical Regiment, Camp Shelby, Miss
LENTINI, Joseph R, 1st Lieut, Grand Rapids, Mich, 3d Armored Battalion, Camp Polk, La
LOSFT, Samuel A, 1st Lieut, Chicago, 33d Division, Camp Forrest, Tenn

MARESH, EVERETT R, 1st Lieut, Detroit, 33d Division, Camp Forrest, Tenn
MAYKA, John P, 1st Lieut, Chicago, 135th Medical Regiment, Camp Shelby, Miss
MEYER, Harold I, Major, Chicago, Fort Leonard Wood, Mo
MITRICK, Joseph Martin, 1st Lieut, Chicago, 135th Medical Regiment, Camp Shelby, Miss
QUISLING, Gunnar D, 1st Lieut, Madison, Wis, 135th Medical Regiment, Camp Shelby, Miss
ROYCE, Emery, 1st Lieut, Sparland, Ill, R I Arsenal, Rock Island, Ill
SMITH, Eldon E, 1st Lieut, Battle Creek, Mich, 135th Medical Regiment, Camp Shelby, Miss
WALTON, William Hester, 1st Lieut, Belleville, Ill, Reception Center, Scott Field, Ill
WESCOTT, Royal James, 1st Lieut, Marquette, Mich, 182d Field Artillery, Fort Leonard Wood, Mo
ZMYSLONY, Walter P, Captain, Milwaukee, 33d Division, Camp Forrest, Tenn

SEVENTH CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Seventh Corps Area, which comprises the states of North Dakota, South Dakota, Minnesota, Nebraska, Iowa, Kansas, Missouri, Arkansas and Wyoming:

ANDERSON, Bruce Murat, 1st Lieut, Rochester, Minn, Corps Area Service Command Station Hospital, Camp J T Robinson, Ark
ASLING, Clarence Willet, 1st Lieut, Lawrence, Kan, Corps Area Service Command Station Hospital, Fort F E Warren, Wyo
BARNES, Asa, Major, Jefferson City, Mo, Corps Area Service Command Station Surgeon's Office, Fort Leonard Wood, Mo
BAUER, Frank Louis, 1st Lieut, Shenandoah, Iowa, Corps Area Service Command Station Hospital, Camp J T Robinson, Ark
BURR, Sherwood Petersen, 1st Lieut, Iowa City, Corps Area Service Command Station Hospital, Fort Leonard Wood, Mo
DOUGLAS, John Munroe, 1st Lieut, Rochester, Minn, Corps Area Service Command Engineer Replacement Center Infirmary, Fort Leonard Wood, Mo
ELLIS, Ralph Carlisle, Captain, Kansas City, Mo, Corps Area Service Command Station Hospital, Camp J T Robinson, Ark
ENGLERTH, Frederick Louis, 1st Lieut, Iowa City, Corps Area Service Command Station Hospital, Camp J T Robinson, Ark
FINK, Daniel Louis, 1st Lieut, Minneapolis, Corps Area Service Command Station Hospital, Fort F E Warren, Wyo

FINLAYSON, Alister Ian, 1st Lieut, Rochester, Minn, Corps Area Service Command Induction Station, Fort Crook, Neb
HAFFKE, Oscar William, 1st Lieut, East Omaha, Neb, Cavalry Replacement Training Center, Fort Riley, Kan
HENDERSON, Robert Wesley, Captain, Bismarck, N D, Corps Area Service Command Station Hospital, Fort F E Warren, Wyo
HILL, Jack Harold, 1st Lieut, Kansas City, Mo, Corps Area Service Command Station Hospital, Fort F E Warren, Wyo
JENSEN, Uffe Trier, 1st Lieut, Des Moines, Iowa, Corps Area Service Command Engineer Replacement Center Infirmary, Fort Leonard Wood, Mo
MILLER, William Jacob, 1st Lieut, St Louis, Corps Area Service Command Station Hospital, Camp J T Robinson, Ark
MILI, Charles William, 1st Lieut, St Louis, Corps Area Service Command Reception Center, Fort Des Moines, Iowa
MORETON, Robert Dulane, 1st Lieut, Rochester, Minn, Corps Area Service Command Station Hospital, Fort Leonard Wood, Mo
NIXON, Ewing McNair, 1st Lieut, Little Rock, Ark, Corps Area Service Command Station Hospital, Camp J T Robinson, Ark
PURCELL, Harry Knox, 1st Lieut, St Louis, Corps Area Service Command Station Hospital, Fort Leonard Wood, Mo
ROSE, Forrest Ivan, 1st Lieut, St Paul, Corps Area Service Command Station Hospital, Camp J T Robinson, Ark
WILSON, Fredrick Dale, 1st Lieut, Morning Sun, Iowa, Corps Area Service Command Station Surgeon's Office, Fort Riley, Kan
WILSON, William Hildebrand, 1st Lieut, Rochester, Minn, Corps Area Service Command Station Hospital, Fort F E Warren, Wyo
ZEMLYN, Milton, 1st Lieut, St Louis, Quartermaster Replacement Center Infirmary, Fort F E Warren, Wyo

Orders Revoked

AMBRUSKO, John, 1st Lieut, Rochester, Minn, Basic Flying School (nonflying status), Taft, Calif
ASLING, Clarence Willet, 1st Lieut, Lawrence, Kan, Corps Area Service Command Station Hospital, Fort F E Warren, Wyo
BOYD, Arthur Montgomery, 1st Lieut, St Louis, Air Base, Fresno, Calif
CARTER, Claud E, Captain, St Louis, 35th Infantry Division, Camp J T Robinson, Ark
CLINE, Edward Wilburn, 1st Lieut, Platte City, Mo, 35th Infantry Division, Camp J T Robinson, Ark
GANLEY, William Covel, 1st Lieut, Kansas City, Mo, Advanced Flying School, Mather Field, Calif
HEIMANN, Verne Rodney, 1st Lieut, Albia, Iowa, Corps Area Service Command Induction Station, Fort Snelling, Minn
HYATT, Robert Fee, 1st Lieut, Monticello, Ark, 3d Cavalry Brigade, Fort Riley, Kan

JONES, Lynwood Beasley, 1st Lieut, Monticello, Ark, 35th Infantry Division, Camp J T Robinson, Ark
LAWSON, Mason Glynn, 1st Lieut, Texarkana, Ark, 2d Cavalry Division, Fort Riley, Kan
MAXWELL, Robert Hayden, 1st Lieut, Wichita, Kan, Basic Flying School, Taft, Calif
MILLER, William Jacob, 1st Lieut, St Louis, Corps Area Service Command Station Hospital, Camp J T Robinson, Ark
NOLAN, Bernard Patrick, 1st Lieut, Pine Ridge, S D, 2d Cavalry Division, Fort Riley, Kan
PETERS, Claude Frederick, 1st Lieut, Benton, Ark, 2d Cavalry Division, Fort Riley, Kan
PROTHRO, Winston Boone, 1st Lieut, Arkadelphia, Ark, 2d Cavalry Division, Fort Riley, Kan
SPEARS, Charles A, 1st Lieut, Billings, Mo, Air Base (nonflying status), Pendleton, Ore
THOMPSON, Albert Wendell, 1st Lieut, Bentonville, Ark, 2d Cavalry Division, Fort Riley, Kan

Relieved from Duty

ANNEBERG, Paul Daniel, 1st Lieut, Carroll, Iowa, Fort Leonard Wood, Mo
CHILAD, Arnold Joseph, 1st Lieut, St Paul, Fort Snelling, Minn
DAVIS, Edward V, Captain, Kirksville, Mo, Jefferson Barracks, Mo
GACUSANA, Jose Miranda, 1st Lieut, Sharon, Kan, Fort Riley, Kan
KAISER, Max Elliott, 1st Lieut, Ottawa, Kan, Fort Leavenworth, Kan
LEWIS, Leland Stanford, 1st Lieut, Garrison, Iowa, Fort Des Moines, Iowa
MILDER, Benjamin, 1st Lieut, Chicago, U S Army General Dispensary, Chicago
MOOS, Daniel James, 1st Lieut, Minneapolis, Fort Snelling, Minn
PHILLIPS, Bert Lee, 1st Lieut, Bauxite, Ark, Camp J T Robinson, Ark
PRESSMAN, Abraham, 1st Lieut, Belcourt, N D, Fort Snelling, Minn

SELLS, Robert Lee, Jr, 1st Lieut, Iowa City, Iowa, Fort Des Moines, Iowa
SEVERIN, Matthew Joseph, Major, Omaha, Fort Omaha, Neb
SHANER, John Frederick, 1st Lieut, St Louis, Jefferson Barracks, Mo
SNODGRASS, William A, 1st Lieut, Pine Bluff, Ark, Camp J T Robinson, Ark
SWAN, Kenneth Carl, 1st Lieut, Iowa City, Fort Des Moines, Iowa
SWANN, Clair Leo, 1st Lieut, Leavenworth, Kan, Fort Leavenworth, Kan
THURLOW, Ralph Moody, Captain, Kansas City, Mo, Fort Leavenworth, Kan
TYRRELL, Thomas Carroll, 1st Lieut, St Louis, Jefferson Barracks, Mo
WAYLAN, Thornton Lewis, 1st Lieut, Nashville, Tenn, Pendleton, Ore
WORD, Harlan Lamar, 1st Lieut, St Paul, Fort Snelling, Minn

EIGHTH CORPS AREA

The following additional medical reserve corps officers have been ordered to extended active duty by the Commanding General, Eighth Corps Area, which comprises the states of Colorado, Arizona, New Mexico, Oklahoma and Texas:

AVES Frederick Huston, 1st Lieut., Dickinson, Texas, Station Hospital, Fort Sam Houston Texas
BEATTY Arch Joe 1st Lieut., Denver, Station Hospital Fort Sill, Okla
BEAVER William Carpenter, 1st Lieut., Pueblo, Colo., Station Hospital, Fort Sill Okla
CAIDWELI Pearson Cash, 1st Lieut., Mount Pleasant Texas, Station Hospital Fort Sam Houston Texas
CLARK Ralph O., 1st Lieut., Oklahoma City Station Hospital, Fort Sill Okla

DeWARE, Jesse Marmaduke, 1st Lieut., Jefferson, Texas, Station Hospital, Fort Sill, Okla
GILL James Pope, Major, Corpus Christi, Texas, 5th Medical Supply Depot Fort Sam Houston, Texas
JOHNSON Henry Myles 1st Lieut., Supply, Okla., Station Hospital, Fort Huachuca Ariz
KOTIN, Paul, 1st Lieut., Arvada, Colo., Station Hospital, Fort Sill, Okla
PARKER Edward Ray, 1st Lieut., Frederick, Okla., Station Hospital, Fort Sill, Okla
SCOTT, George Warren, 1st Lieut., Tishomingo, Okla., Station Hospital, Fort Sill Okla
WILLS, Charles Bennett, 1st Lieut., Denver, Station Hospital Fort Sill, Okla

Orders Revoked

HAMRA Henry M., 1st Lieut., Phillips, Texas
HIXSON, William Cooper, 1st Lieut., Galveston, Texas

THE ASSOCIATION OF MILITARY SURGEONS

All physicians are invited to attend the meeting of the Association of Military Surgeons of the United States at the Brown Hotel, Louisville, Ky., October 29-November 1. The preliminary tentative program indicates that among the speakers will be

Col Harold D. Corbuser, M. R. C. U. S. Army, Presidential Address
Rear Admiral Ross T. McIntire, Surgeon General of the Navy, Policies and Activities of the Medical Department of the United States Navy in the Present National Emergency
Dr. Warren F. Draper, Assistant to the Surgeon General, U. S. Public Health Service, Present Policies and Activities of the United States Public Health Service
Brig Gen Frank T. Hines, Administrator of Veterans' Affairs, Progress of the Part the Veterans' Administration Is Playing in the National Defense Program
Major Frank B. Wakeman, M. C., U. S. Army, representing Major Gen James C. Minge, Surgeon General, U. S. Army, Present Policies and Activities of the Medical Department of the United States Army
Col Robert H. Duenner, M. C., U. S. Army, Fort Knox, Ky., Medical Service of the Mechanized Forces
Col Paul E. Howe, Sanitary Corps, U. S. Army, Nutritional Problems of the Army
Col Fred H. Albee, M. R. C. U. S. Army, Treatment of Ununited Fractures of Importance to the Military Service
Capt Lucius W. Johnson, M. C., U. S. Navy, Medical Service at Remote Naval Bases
Capt William L. Mann Jr., M. C., U. S. Navy, Medical Arrangements for Combined Operations of Land Forces and Sea Forces (with motion pictures)

The following are scheduled for papers, the titles of which are not yet available: Major Gen C. R. Reynolds, U. S. Army, retired, Brig Gen Leigh C. Fairbank, assistant to the Surgeon General, U. S. Army, Col Irvin Abell, Louisville, Ky., Col Leonard C. Rowntree, M. R. C., U. S. Army, chief, Medical Division, Selective Service System, Washington, D. C., Col Raymond A. Kelser, Veterinary Corps, U. S. Army, and Lieut Col David N. W. Grant, M. C., U. S. Army, Office of the Chief of the Air Corps

HOSPITAL WARD CARS

The War Department announced on August 14 that four hospital ward cars to be used with army hospital trains have been authorized. These cars, which will be converted Pullman cars, will cost \$22,556 each. Each ward car will have beds for 32 patients, and two of them will be used with each hospital train. They will have also all the necessary facilities for the care of patients in a hospital ward. A standard hospital train for the Medical Department of the Army will consist of one administrative unit car, two of the ward cars and a variable number of the standard sleeping cars. The present hospital train has been developed after years of experimentation and knowledge gained during the World War in transporting soldiers, and they will get large scale practical tests during army maneuvers this fall. The administrative unit car contains an operating room, a kitchen capable of feeding five hundred if necessary, bunks, a shower for the kitchen personnel and an administrative office and quarters for the two officers in charge. Each of the new ward cars will have three army nurses and three orderlies working on an eight hour shift. The nurses will be quartered in drawing rooms in sleeping cars. Two of the hospital unit cars have recently been delivered and are now at the Medical Field Service School, Carlisle Barracks, Pa., and at Fort McPherson, Ga.

FOUR ARMY NURSES PROMOTED TO CAPTAINS

Four nurses with long service records in the U. S. Army Nurse Corps dating at least back to the first World War were promoted to the rank of captain in the nurse corps, August 15. These nurses were Genevieve Bergeson, Ruth Anderson, Alice Becklen and Joanna Peters, each of whom has been assigned to supervise the nursing service at hospitals ranging from 1,750 to 2,000 beds. With their promotion the Army Nurse Corps now has 35 captains, 29 of which have been promoted in the last year.

HEALTH SUPPLIES RATING PLAN OF DIVISION OF PRIORITIES

Fourteen categories of medical, surgical and dental essentials necessary to public health have been placed under a health supplies rating plan by the division of priorities in the Office of Production Management. The plan is designed to anticipate any possible delays in the production of health preserving supplies.

The supplies to which the rating plan now applies are adhesive plasters, anesthesia apparatus and supplies, biologicals, antitoxins and serums, clinical thermometers, diagnostic instruments, hospital laboratory equipment and supplies, operating room equipment, hypodermic syringes and needles, instruments (surgical and dental), medicinal chemicals (limited to medicinal use only), rubber hospital sundries, hospital sterilizers, surgical dressings, x-ray equipment and supplies (medical and dental).

Manufacturers of the equipment and supplies in this list use many of the materials which have been placed under priority control because of scarcity. A manufacturer wishing to avail himself of the plan must make application to the Health Supplies Section, Office of Production Management, for a form "Requirements for Scarce Materials" and at the same time file a complete list of all the finished articles he manufactures that may be covered by the plan. If his application is granted, the priority rating of A-10 will be assigned to his orders for the scarce materials he has been unable to obtain.

The list of supplies covered by the rating plan was drawn up by the Health and Medical Committee of the Federal Security Agency, the Office of Price Administration and Civilian Supply and the Health Supplies Section of the Office of Production Management, in consultation with the Army and Navy Munitions Board, and will be revised from time to time as scarcities are relieved or threaten to develop, according to the announcement.

CARLISLE BARRACKS, PA., AN EXEMPTED STATION

The War Department has deemed it advisable to place all activities at Carlisle Barracks, Pa., under the direct supervision of the Surgeon General of the Army. The only military activities carried on at this station are those of the medical field service school. About a year ago Carlisle Barracks was placed under the command of the corps area commander, but actually it was under the command of three officers, namely the commander of the First Army, the corps area commander and the Surgeon General.

ORGANIZATION SECTION

OFFICIAL NOTES

ANNUAL CONFERENCE

The Annual Conference of Secretaries of Constituent State Medical Associations will be held at the offices of the American Medical Association in Chicago on Friday and Saturday, November 14 and 15.

It is thought that the conference will be attended by the secretaries of all constituent state medical associations, by all of the editors of the medical journals of these associations and by officers and members of the Board of Trustees and administrative personnel of the American Medical Association.

Presidents and other officers of the constituent state medical associations and of the component county medical societies who may desire to attend the conference will be cordially welcome.

It is expected that Surgeon General of the United States Army Major General James C. Magee, Federal Security Administrator Hon. Paul V. McNutt and Director of Selective Service System General Lewis B. Hershey will be present and take an active part in the program of the conference.

The official program will be printed in *THE JOURNAL* at the earliest possible time.

MEDICAL ECONOMIC ABSTRACTS

ILLNESS OF TRANSIENTS AND MEDICAL CARE

While the fact is never clearly stated, this study¹ might well have begun with a recognition of the fact that all Americans, save the Indians, are migrants or descendants of migrants who have been throughout our history constantly seeking a land of promise on a frontier that is no longer with us. It is no peculiarity of today that "migration is motivated largely by economic need" and only to a slight degree by ill health, even though there are at least 10,000 tuberculous transients who went to the Southwestern states and are now unable to pay for needed sanatorium care. Transients are no permanent section of the population, since 70 per cent of the families and 77 per cent of the unattached had been migrants for less than a year. They are persons who have been driven out of their homes, such as they had, by much the same sort of economic pressure that has driven generations of their ancestors on similar treks. They are naturally in the low income class with environments that make them subject to illness. "The pattern appears to be as follows: Among all interstate transients the most recent migrants have the least number of disabling illnesses, and as migration continues the incidence of disabling illness increases." Some of the reasons for this pattern are that traveling itself creates a risk of communicable diseases and illness is aggravated by insanitary conditions at camps and shelters. Migrants are "marginal individuals" to start with. Some have migrated because they are ill and they now receive less medical care than needy resident groups. Transients may carry diseases, and the camps and wretched housing conditions may make them centers of local infection.

In spite of the large part that migrants have played in American history there is a sort of local hostility to transients which has found expression in all sorts of legal limitations on public assistance to any but permanent residents. These laws place exceptional obstacles in the way of any form of relief, including medical. The main dependence for medical care is in clinics and outpatient departments, and especially such of these as are governmental agencies.

The diseases suffered by migrants are not particularly different from those of permanent residents. They suffer more accidents than the settled population because continuous traveling under unsafe conditions subjects them to increased dangers. The largest organization formed specifically for supplying medical care to transients is the Agricultural Workers Health and Medical Association in the Southwest. After pointing out that migration should be recognized as a permanent characteristic of American society and that there should be a national policy

with an organization to direct and influence migration and "a program of hospital and sanatorium construction and maintenance and of public medical care for the medically needy, through the combined efforts of the federal government and the states," the recommendations conclude that "the federal government should neither formulate nor contribute funds to a health program organized exclusively for transients. . . . Determination of medical need and administration of all public medical care given to the transient should be allocated to that public medical agency in each community charged with similar responsibilities for needy residents."

GOVERNMENT HEALTH SERVICES

According to a report of the United States Public Health Service, the first survey of the health services of state governments was made and published by the American Medical Association in 1915. The rapid expansion and wide diversification of such services in recent years has led to a new survey and report.¹ This extension of activities has spread to so many functions and been so widely scattered among governmental agencies as almost to defy classification. Thirty-five distinct activities were finally listed as of sufficient public health significance to be included in the investigation. These include such diverse items as vital statistics, control of such diseases (each a separate activity) as acute communicable tuberculosis, venereal, hookworm, pneumonia, malaria and cancer, and control of housing, plumbing, smoke, fumes and odors, rodents, shellfish, milk, pest mosquitos, food and drugs. Other activities embrace maternity, infant, preschool and industrial hygiene, school health service, general sanitation, supervision of hotels, restaurants and touring camps, mental hygiene and hospitals, care of crippled children, blindness, vocational rehabilitation, medical care for the needy, dental and laboratory service, health education, research, and licensure of health professions and agencies.

There is practically no order, system or planning in distribution of these activities among agencies of government.

Experimental work in one state showed plainly that, because of the overlapping and interweaving of health services provided by the several state agencies, the true comprehensive pattern could not feasibly be obtained through the medium of a mailed questionnaire. It was decided, therefore, that medical officers attached to the district offices of the United States Public Health Service should, through personal interview with the directors of the various health activities, collect the desired information. By this method, individual differences in interpretation of the questions were reduced to a minimum, and description of the exact function of each agency with respect to a specific health problem was facilitated.

1. Blankenship, C. F., and Safer, Fred. A Study of Medical Problems Associated with Transients, Public Health Bull. 258, Federal Security Agency, United States Public Health Service, 1940.

1. Mountain, Joseph W., and Flook, Evelyn. The Distribution of Health Services in the Structure of State Government, Pub Health Rep. 56:1673 (Aug. 22) 1941.

The composite pattern of health activity for the several states includes contributions of state health departments, departments of welfare, agriculture, education, labor, mining, conservation, public utilities, engineering, public safety, state institutions and registration, of boards of control or boards of affairs, of state universities, independent hospitals and independent laboratories, of special boards commissions or independent offices created especially for a particular activity, and of independent licensing boards.

In all, for the country as a whole forty-eight separate agencies were listed as participating in one or another of the health activities included in this study.

Because the difference between many of these agencies was largely one of terminology, it was found possible to reduce them to seventeen classifications.

A table was then prepared showing the department of state government responsible for each of the thirty-five specific health activities in each state and territory, the District of Columbia and the Virgin Islands. The first impression which is given from the study of this table is largely one of confusion.

Realization that within a single state as many as eighteen separate agencies contribute something to the health activities covered is somewhat startling. In no jurisdiction are less than six agencies involved, and the median number of departments, boards and commissions concerned with programs having public health significance is eleven per state. When dispersion is viewed from the point of specific activity among all the states the situation is quite as remarkable. Records for a few activities are cited. For the nation as a whole, fifteen different types of state organizations participate in food and drug control work, eleven are engaged in sanitation of water supplies, eleven touch on the problem of general medical care of the needy. The latter statement, by the way, represents only about three-fourths of the areas included, because fourteen states make no provision for service of this type. Hospitalization of the tuberculous is the product of nine different types of state agencies, and hospitalization of mental patients of seven. Mental hygiene, a relatively new entrant into public health awareness is split among nine separate organizations in the seventeen states which have initiated such activities.

In magnitude, programs cover the entire range from regulatory functions only or advisory service only—and that limited to requests—to operation of complex direct service units. From the standpoint of organizational schemes, greatest variation exists among the states in their conception of the portion of responsibility to be borne by the state agency and the portion to be delegated to local jurisdictions. In one place it is the policy to limit state assistance to advice supervision or promotion. In another, the state agency actively engages in direct service. In still another, the first plan is followed for some activities and the second plan for others. Distribution of financial aid for approved projects is also a form of state participation now in common use.

After these steps have been taken, an effort was made to determine the cost of such services. It is admitted that this effort cannot claim any high degree of accuracy, although "it is believed that the expenditure figure finally obtained is more complete than that provided by any previous survey." The grand total of such expenditure for the United States is \$285,715,800 annually. The approximate average per capita expenditure is \$1.90, but this varies from Tennessee's \$0.76 to Nevada's \$4.26. The largest source of such expenditures is the state which accounts for 81.4 per cent. The local authorities contribute 3.9 per cent, the United States Public Health Service under title VI of the Social Security contributes 3.2 per cent, under the venereal disease 1 per cent and through the Children's Bureau title V 2.5 per cent, other sources contribute 8 per cent. There is nothing approaching uniformity in these ratios between the different states.

Full time administrative and field personnel engaged in carrying out the health programs of the various state agencies number 18,737.

Because of the variability of part time employment however, it has not been considered practicable to include other than full time personnel. Institutional employees have been omitted from the count likewise, because the data at hand in central state offices are not susceptible to breakdown by classification or by description of duties.

MEDICAL LEGISLATION

DISTRICT OF COLUMBIA

Bill Introduced—H. R. 5631, introduced by Representative Randolph, West Virginia, proposes to amend the healing arts practice act in the District of Columbia by imposing a citizenship requirement on applicants for licenses to practice the healing art.

MEDICAL BILLS IN CONGRESS

Change in Status—H. R. 3484 has passed the House and Senate, providing retirement pay and hospital benefits to Reserve Officers in the Army who were called or ordered into active military service by the federal government for extended military service in excess of thirty days on or subsequent to Feb. 28, 1925, other than for services with the Civilian Conservation Corps and who are now disabled from disease or injury contracted or received in line of duty while so employed.

Bills Introduced—S. 1913, introduced by Senator White for himself and Senator Brewster, both of Maine, and H. R. 5676, introduced by Representative Smith, Maine, propose to create a Division of Water Pollution Control in the United States Public Health Service. Such sums as may be necessary will be appropriated, it is contemplated, for grants in aid or loans to carry out such projects or treatment works as are set forth in the budget by the President, provided that in no fiscal year shall the appropriation exceed the sum of \$50,000,000. H. R. 5674, introduced by Representative Traynor, Delaware, undertakes to protect the public health by the prevention of certain practices "leading to dental disorders, and to prevent the circumvention of certain state laws regulating the practice of dentistry." The apparent purpose of this bill is to restrict mail order business in dentures.

WOMAN'S AUXILIARY

Arizona

The annual meeting of the Woman's Auxiliary to the Arizona State Medical Society was held recently at Phoenix. The women were welcomed by Mrs. Charles Ploussard, president of the Maricopa County auxiliary. Mrs. Jesse D. Hamer, state president, said that Yavapai County had recently reorganized and that the Pima and the Maricopa County auxiliaries have one hundred and twenty-five memberships. Pima County gave \$100 to the Tucson Preventorium and \$50 to the school milk fund. Maricopa County contributed to the Community Chest, the Crippled Children's Home and \$5 a month to the school lunch project, also toys were distributed to children who were in the hospital at Christmas. Mrs. James Moore, chairman of legislation, told of the passing of House Bill 178 which gives osteopaths the right to do surgery by legislation and not by education. This bill was passed by both houses without a public hearing and signed by the governor of the state. A referendum was suggested and all doctors and their wives are now getting signatures for petitions. Dr. Henry F. Helmholz, professor of

pediatrics at the University of Minnesota Medical School, talked to the auxiliary. Mrs. Harlan P. Mills of Phoenix was elected president for 1942. Mrs. B. B. Edwards of Tucson is the incoming president for 1941.

Ohio

Butler County organized a woman's auxiliary recently with the following officers: president, Mrs. C. I. Stafford, Oxford, vice president, Mrs. C. J. Chamberlain, Hamilton, recording secretary, Mrs. F. W. Brosius, Middletown, corresponding secretary, Mrs. George Flenner, Hamilton, and treasurer, Mrs. L. H. Skimming, Middletown.

Wisconsin

Three hundred women attended a benefit bridge party at Green Bay, given by the Woman's Auxiliary to the Brown-Kewaunee-Door County Medical Society. Proceeds were given to the St. Mary's Infant's Home. The committee in charge was made up of Meses R. B. Lenz, Louis Milson and Glenn Denys.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ADDITIONAL MEDICAL COLLEGE NEWS AND ARTICLES APPEAR IN THE STUDENT SECTION, PAGE 1125.

CALIFORNIA

Lectures on Pediatrics.—Dr. Horton R. Casparis, professor of pediatrics, Vanderbilt University School of Medicine, Nashville, Tenn., gave a series of lectures on pediatrics at various places in California during September. He lectured in Oakland, September 4-5; San Diego, September 10, and he conducted a course of lectures and clinical discussions before the Southwestern Pediatric Society in Los Angeles, September 11-12. Dr. Casparis also lectured in Phoenix, Ariz., September 2.

Dr. Bowman Named Director of Langley Porter Clinic.—Dr. Karl M. Bowman, director of the division of psychiatry, Bellevue Hospital, and professor of psychiatry at New York University College of Medicine, New York, has been appointed to direct the new Langley Porter Clinic, a neuropsychiatric unit of the state department of institutions, under the direction of the University of California Medical School, San Francisco. He will begin his new work at the clinic about November 1. The new \$500,000 building is not expected to be completed by that time, but Dr. Bowman will begin the selection of personnel and arrange other organizational detail. The cornerstone for the new clinic was laid, April 5. The building is situated on the campus of the medical school and is named in honor of Dr. Langley Porter, dean emeritus and professor of medicine and lecturer in medical history and bibliography, emeritus, of the medical school. Dr. Bowman was born in Topoka, Kan., in 1888 and graduated at the University of California Medical School in 1913. According to a statement from the California Department of Institutions, Dr. Bowman will be employed partly by the University of California in the capacity of head of the department of psychiatry there and partly by the department of institutions in the capacity of medical superintendent of the Langley Porter Clinic. Half of Dr. Bowman's salary will be paid from the budget of the clinic and half from the budget of the department of psychiatry of the university.

DELAWARE

State Medical Meeting in Wilmington.—The Medical Society of Delaware will hold its one hundred and fifty-second annual session at the Delaware Academy of Medicine, Wilmington, October 7-8. The president, Dr. Emil R. Mayerberg, Wilmington, will deliver his address Tuesday. Other speakers on the program will include:

- Dr. Norman Cutler, Wilmington, Some Aspects of Eye Muscle Problems.
- Dr. Willard H. Kinney, Philadelphia, Significance of Hematuria.
- Dr. William E. Bird, Wilmington, Littre's Hernia—A Case Report.
- Dr. Kenneth M. Corrin, Wilmington, Treatment of Convulsions.
- Dr. Joseph Stokes Jr., Philadelphia, Studies in Measles.
- Dr. Harold W. Jones, Philadelphia, Discussion of the Transfusion of Whole Blood, Plasma and Serum.
- Dr. Lawrence J. Rigney, Wilmington, Analysis of the Clinical Data of 47 Proved Cases of Carcinoma of the Pancreas.
- Dr. George J. Boines, Wilmington, Diphtheria and Intradermal Scarlet Fever Immunization.
- Dr. Adolph Walkings, Philadelphia, Treatment of Compound Fractures.
- Dr. Margaret C. Sturgis, Philadelphia, Precancerous Lesions of the Uterine Cervix.

The annual banquet will be held at the Hotel Du Pont on Wednesday evening. The woman's auxiliary to the society will hold its annual meeting on Wednesday.

DISTRICT OF COLUMBIA

Campaign to Eradicate Rats.—A drive to eliminate rats from the District of Columbia has been announced by the District department of health, newspapers reported on September 3. An appeal has been issued to householders and housewives to cooperate in removing all sources of food and places where rats can find harborage and build nests. The campaign will be conducted on a block to block basis. Local health authorities, federal experts on rodent control and committees of the Medical Society of the District of Columbia and civic groups have been engaged in conferences for several weeks formulating plans for the eradication campaign.

FLORIDA

New Bureau for Malaria Control.—The state department of health has created a new bureau of malaria and placed Dr. John E. Elmendorf Jr., Jacksonville, in charge as director. The results obtained by a malaria department in Escambia County proved the need for such a division in the state department of health, it was said. The county unit is operating under the joint cooperation of the state board of health and the Rockefeller Foundation and will continue under the active supervision of the new state bureau. Activities of the new bureau include entomologic studies in counties where malaria is known to occur and clinical examinations in the schools. According to Florida *Health Notes*, 2,749 persons were reported to have died of malaria in Florida in the period 1930-1939. The state is said to outrank Louisiana, Georgia, Alabama and Texas in death rates from this cause and, in many counties, these rates have reached a level well over 100 per hundred thousand of population.

ILLINOIS

Society News.—The Henry County Medical Society was addressed in Kewanee, August 21, by Drs. Arthur F. Abt on "Blood Diseases of Children" and Aaron Arkin, "Blood Dyscrasias, Diagnosis and Therapy." Both speakers are from Chicago.—Dr. William B. Kountz, St. Louis, discussed "The Diagnosis and Treatment of Degenerative Diseases of the Heart and Blood Vessels" before the Madison County Medical Society in Highland, September 5.

Dr. Rector Goes to Michigan.—Dr. Frank L. Rector, Evanston, for eleven years midwestern field representative of the American Society for the Control of Cancer, has been appointed cancer consultant on a full time basis to the Michigan State Department of Health, Lansing, effective September 15. In his new position Dr. Rector will direct an educational program against cancer to fit allied, professional and lay groups. The program is under the joint auspices of the Michigan State Medical Society, the state department of health, the Michigan division of the Women's Field Army of the American Society for the Control of Cancer and the state department of public instruction. It is hoped ultimately to weld all professional groups, including dentists and nurses, into the program. Dr. Rector's work will be principally with individual physicians and the county medical societies, particularly in the rural areas. Miss Grace Townsend, who has been named his assistant, will devote most of her time to lay groups. Dr. Rector graduated at George Washington University School of Medicine, Washington, D. C., in 1907. He was at one time editor of *Nation's Health*, executive secretary of the Chicago Medical Society and a member of a specially appointed committee, under the auspices of the Institute of Medicine of Chicago, to make a survey of medical services in the penal institutions of Illinois.

Chicago

The Bevan Lecture.—Dr. William E. Ladd, Boston, will deliver the thirteenth annual Arthur Dean Bevan Lecture of the Chicago Surgical Society at the society's forty-first annual dinner at the University Club of Chicago, October 3. His subject will be "Children's Surgery and Its Relation to the Specialties." Dr. Ladd is William E. Ladd professor of surgery at Harvard Medical School, Boston. The professorship was endowed this year by a group of friends of Dr. Ladd in recognition of his contributions to the field of surgery in children.

New Head for Department of Surgery at Loyola.—Dr. Harry A. Oberhelman, associate clinical professor of surgery at Rush Medical College and senior attending surgeon at Presbyterian Hospital, has been appointed chairman of the department of surgery at Loyola University School of Medicine. He fills the vacancy that occurred when Dr. Louis D. Moorhead resigned his affiliation with the school as dean and professor and head of the department to devote his time to private practice. Dr. Oberhelman graduated at Rush Medical College in 1921. Dr. Francis J. Braceland, formerly of Philadelphia, is dean of the Loyola University School of Medicine.

Institute for Juvenile Research.—The Institute for Juvenile Research was made a division of the state department of public welfare by legislative action of the recent general assembly. According to the *Welfare Bulletin*, the new law gives to the director of the department of public welfare the authority to appoint the head of the institute, and thereby this ceases to be a code position filled by the governor. In effect, this position becomes subject to civil service regulations. There is also a change in title from director to superintendent, which is in keeping with administrative policy of allowing but one director in the department. Dr. Paul L. Schroeder was reappointed on July 1 as head of the institute with the new title of superintendent. He was first named in charge of the institute in 1930.

INDIANA

Changes in Health Officers.—Dr. Charles K. Kincaid has resigned as director of district number 3, state department of health, with headquarters in New Albany, to accept a similar position in Eau Claire, Wis., effective September 15.—Dr. Fred W. Grayston, Huntington, has been appointed health commissioner of Huntington County, succeeding Dr. James M. Hicks Jr., resigned.

Postgraduate Courses in Obstetrics.—The Indiana State Medical Association, in cooperation with the Indiana University School of Medicine and the state board of health, is again sponsoring both intramural and extramural postgraduate courses in obstetrics during the coming year. Four two weeks sessions will be given at the Coleman Hospital, Indianapolis. Each session is open to six physicians, who will reside at the hospital, where they can be in close contact with the clinical work both at the university hospitals and at the city hospital. The dates for these intramural courses will be October 13-25; January 12-24, 1942; April 13-25, 1942, and July 13-25, 1942. There will be no charge for room and board, and the required deposit of \$10 will be refunded on the satisfactory completion of the course. The courses are made possible without cost through the cooperation of the bureau of maternal and child health of the state board of health with Indiana University Hospitals. They are under the direction of Dr. Carl P. Huber, associate professor of obstetrics at the medical school. The extramural courses are available by arrangement with Dr. Huber and are offered to any area of the state in cooperation with the local county medical society.

IOWA

Fifty Years of Practice.—Dr. Fred H. Howard, Strawberry Point, recently received a gold button from the Iowa State Medical Society denoting fifty years in the practice of medicine.—Dr. Thomas F. Beveridge, Muscatine, was honored at the annual dinner of the Iowa-Illinois Central District Medical Association recently, when he was presented with a medal marking his completion of fifty years' practice.

Immunization Program.—The house of delegates of the state medical society has approved the continuation of the immunization program of the society's committee on child health and protection, and the week of November 3 has been tentatively set for this year's campaign. A departure this year would be the fulfillment of a recommendation by the committee that two injections of diphtheria toxoid be given, two to four weeks apart, instead of one injection as was employed last year. The state medical journal urges county medical societies to give serious consideration to the number of injections so that an agreement may be reached before the campaign starts. More than 70,000 vaccinations were performed during the state society's first immunization campaign in 1939. In 1940, 42,775 vaccinations against smallpox were performed and 54,031 against diphtheria.

KENTUCKY

State Medical Meeting.—The annual meeting of the Kentucky State Medical Association will be held at the Brown Hotel, Louisville, September 29 to October 2, under the presidency of Dr. William E. Gary, Hopkinsville. Dr. Frank H. Lahey, Boston, President of the American Medical Association, will deliver an address before a scientific session on "Diagnosis and Management of Lesions of the Stomach, Duodenum and Jejunum" and another at a public meeting on "Developments in Medicine, National, Economic and Scientific." Dr. Arthur Hale Curtis, Chicago, will also address the public meeting on "Unrecognized Features of Gross Pelvic Anatomy as Applied to Gynecological Surgery" and a scientific session on "Management of Primary Dysmenorrhea with Special Consideration of the Anatomy and Surgical Technic." Dr. Fred W. Rankin, Lexington, President-Elect of the American Medical Association, will be the speaker at the annual dinner, which is to be in honor of Dr. Rankin and Dr. Elmer L. Henderson, Louisville, president-elect of the state association and also a Trustee of the American Medical Association. Dr. Rankin's address will be on "The Medical Profession and Military Preparedness." Other guests will be Dr. Alphonse McMahon, St. Louis, who will discuss "Chemotherapy in Pneumonia" and Thomas G. Hull, Ph.D., Director of Scientific Exhibits for the American Medical Association, Chicago, who will participate in the scientific exhibit. The oration in surgery will be delivered by Dr. F. Guy Aud, Louisville, on "Changes in the Surgical Treatment of Peptic Ulcer" and the oration in medicine by Dr. A. Thornton Scott, Lexington, on "The Epilepsies."

MICHIGAN

Change in Health Officers.—Dr. Clayton C. Benjamin, Grant, has been named acting director of the Alger-Schoolcraft health unit for the coming year, succeeding Dr. Ervin J. Brenner, Manistique, who has been granted a leave of absence for postgraduate study at Johns Hopkins University, Baltimore. Dr. Benjamin will live in Manistique.

Extramural Courses.—A series of extramural courses for physicians will begin on October 1 at Hurley Hospital, Detroit, under the auspices of the state medical society and the University of Michigan Medical School, Ann Arbor, as follows:

- October 1, Dr. Walter G. Maddock, Ann Arbor, Surgical Aspects of Gallbladder Diseases and Dr. John M. Sheldon, Ann Arbor, Office Management of the Allergic Patient.
- October 8, Dr. Norman R. Kretschmar, Ann Arbor, Recognition and Prevention of Accidents in Pregnancy, and Dr. Douglas Donald, Detroit, Medical Complications of Pregnancy (symposium).
- October 15, Dr. Fredrick F. Yonkman, Detroit, Emergency Drugs in General Practice, and Drs. Richard M. McKean and Clair Fremont Vale, both of Detroit, Office Management of the Diabetic Patient (round table discussion).
- October 22, Dr. Maddock, Diagnosis and Management of Cancer of the Gastrointestinal Tract, and Dr. John L. Law, Ann Arbor, Abnormalities of Growth and Development in Children.

MINNESOTA

Personal.—Dr. Philip C. Welton became superintendent of Buena Vista Sanatorium, Wabasha, August 1, succeeding Dr. Russell R. Hendrickson, who resigned to become superintendent of Sand Beach Sanatorium, Lake Park. Dr. Welton was formerly in Richfield, Utah, as a deputy state health officer.

State Program of Mental Hygiene.—A program of mental hygiene and mental testing in the state division of public institutions is announced in *Minnesota Medicine*. Dr. David E. McBroom, superintendent of the Minnesota Colony for Epileptics, Cambridge, has been named director of the program, and Dr. Royal C. Gray, Minneapolis, psychiatrist of state penal institutions, has been named acting superintendent of the colony. The appointments were effective on September 1. Dr. McBroom was president of the East Central Minnesota Medical Society this year.

NEW JERSEY

Society News.—Dr. Henry B. Decker, Camden, addressed the Gloucester County Medical Society, Woodbury, September 18, on "Diagnosis and Treatment of Some of the Commoner Dermatoses" and Mr. J. Lenox Gray, Newark, "Hospital Service Plan of New Jersey."—Dr. Isidor S. Ravdin, Philadelphia, addressed the Atlantic County Medical Society, Atlantic City, September 12, on "Some Recent Advances in Surgical Therapeutics with Special Reference to Military Surgery."

NEW YORK

District Meetings.—The Sixth District Branch of the Medical Society of the State of New York held its annual meeting at Cooperstown, September 18, with the following speakers:

- Dr. Gilbert Daldorf, Valhalla, The Medical Examiner and the Coroner—Is New Legislation Needed?
- Dr. Hugh Auchincloss, New York, Diagnosis and Rationale in Treatment of Carcinoma of the Breast.
- Dr. Edward A. Strecker, Philadelphia, Involutional Melancholia.
- Dr. Robert L. Levy, New York, Management of the Patient with Cardiac Pain.
- Dr. Walter M. Boothby, Rochester, Minn., The Physiology of High Altitude Flying.
- Dr. Norman H. Jolliffe, New York, Clinical Applications of Recent Advances in Nutrition.

The Seventh District Branch met on September 25 in Rochester. At the morning session speakers were Drs. George H. Whipple, Rochester, on "Plasma Proteins and Clinical Problems" and Walter E. Dandy, Baltimore, "Diagnosis and Treatment of Lesions of the Cranial Nerves." In the afternoon there will be four panel discussions, as follows: "Health and Disease in Infancy and Childhood," with Dr. Albert D. Kaiser as conductor; "Modern Drug Therapy," Dr. James H. Sternier; "The Gastrointestinal Tract from Medical and Surgical Points of View," Dr. William J. Merle Scott, and "The Puerperal Period and Its Complications," Dr. James K. Quigley.

New York City

Personal.—Mr. Karl Eilers, president of Lenox Hill Hospital and a former president of the Associated Hospital Service of New York, died, August 18.—Dr. Philip I. Nash, Brooklyn, was recently honored with a testimonial dinner in recognition of his activities in the Coney Island community for many years. He has been chairman of the medical board of the Coney Island Hospital and of the Harbor Hospital for many years. He was the first president of the Coney Island Chamber of Commerce. At one time Dr. Nash was president of the Medical Society of the County of Kings and was on the faculty of the Long Island College of Medicine.

Courses in Industrial Hygiene.—Two courses in industrial health will be given at the New York University Center for Safety Education during the fall term. One on "Industrial Hygiene and Occupational Diseases" dealing with modern methods and techniques of industrial hygiene, accident prevention and health education will be given Monday evenings beginning on October 6. The other, "Industrial Hygiene and Accident Prevention for Nurses," will be given Tuesday evenings beginning on October 7. The courses are offered to insurance and industrial engineers, industrial nurses, inspectors and other interested persons. They will consist of fifteen two hour lectures, discussion and demonstration periods by experts in various fields.

Rockefeller Hospital Seeks Special Patients.—The Hospital of the Rockefeller Institute for Medical Research announces that patients suffering from certain diseases now under investigation may be referred to the hospital by physicians and others who are interested and who are willing to cooperate in this way. The diseases now under investigation are Bright's disease (children and adults with the nephrotic syndrome and with nephritis in the early stages), heart disease (advanced heart failure), rheumatic fever (children from 8 to 12 in the inactive stage of this disease, whose parents are willing to bring them to the outpatient clinic monthly from October to June), acute respiratory diseases (acute lobar pneumonia and acute bronchopneumonia in adults), neurotropic virus diseases (acute encephalitis and aseptic meningitis) and nutritional diseases (advanced non-malignant diseases of the liver and muscular dystrophies and atrophies). Physicians should communicate with the hospital before sending a patient.

NORTH CAROLINA

Dr. Berryhill Becomes Dean.—Dr. Walter Reece Berryhill, acting dean of the University of North Carolina School of Medicine, Chapel Hill, since the resignation in 1940 of Dr. William deB. MacNider, has been appointed dean. Dr. Berryhill graduated from Harvard Medical School, Boston, in 1927. Afterward he taught at Western Reserve University School of Medicine, Cleveland, and was appointed university physician and associate professor of medicine at North Carolina in 1933. In 1937 he was made assistant dean.

OHIO

Postgraduate Meeting.—The Mahoning County Medical Society, Youngstown, will present Dr. Tom D. Spies, Birmingham, Ala., in a special postgraduate meeting, October 30. The meeting will be devoted to discussion of vitamins, with Dr. Spies giving a formal address in the afternoon, followed by an open forum at a dinner session.

Grants to Health Museum.—First gifts to the newly established Cleveland Health Museum came from the Cleveland Foundation, which granted \$250 July 30 and the Thomas H. White Trust, which gave \$1,500 in August. The grants will be used for workshops in the health education laboratory. The added equipment will allow the museum to make new displays, loan exhibits and duplicate material for traveling exhibits.

Lower Lecture and District Meeting.—The annual Lower Lecture of the Academy of Medicine of Cleveland will be presented in conjunction with the annual meeting of the Fifth Council District of the state medical association, October 9, in Cleveland. Dr. Chester S. Keefer, Boston, will present two papers in the afternoon on the sulfonamide drugs, and in the evening Ernest O. Lawrence, Ph.D., professor of physics and director of the radiation laboratory at the University of California, Berkeley, will deliver the Lower Lecture on "The Newer Physics in Medicine."

Personal.—Dr. Lorin E. Kerr Jr., recently health commissioner of Iron County, Mich., with headquarters in Stambaugh, has been named commissioner of the Lorain County health district with headquarters in Oberlin. Dr. William B. Baily, St. Clairsville, health commissioner of Belmont County, has resigned to join the U. S. Public Health Service. Dr. Lynne E. Baker, resident physician at the Hamilton County Tuberculosis Hospital, Cincinnati, has been appointed head of the tuberculosis division of the Florida State Board of Health, according to the *Ohio State Medical Journal*.

OREGON

Plague Infection.—Under date of August 14, plague infection was reported found in tissue from a ground squirrel, *Citellus oregonus*, shot July 30 at Fish Lake, 80 miles south-east of Burns, Harney County.

PENNSYLVANIA

Society News.—Dr. Ralph M. Tyson, Philadelphia, addressed the Lebanon County Medical Society, Lebanon, September 8, on "Common Pediatric Problems."—Dr. Charles C. Higgins, Cleveland, addressed the Cambria County Medical Society, Johnstown, September 11, on "Management of Infections of the Urinary Tract."—Drs. Henry A. Gorman and Archibald R. Judd, Hamburg, addressed the Northampton County Medical Society, September 19, at the Northampton Country Club near Easton on "Collapse Therapy."—Dr. Joseph H. Barach, Pittsburgh, addressed the Jefferson County Medical Society, Punxsutawney, September 11, on "Present Day Treatment of Diabetes and Its Complications."

VERMONT

Committee to Administer Medical School.—A committee of administration has been appointed by the board of trustees of the University of Vermont, Burlington, to take charge of the medical school. Dr. Hardy A. Kemp recently resigned as dean to become dean of Ohio State University College of Medicine, Columbus. Members of the new committee are Drs. Clarence H. Beecher, chairman; Ernest H. Buttle and Arthur B. Soule Jr.

WEST VIRGINIA

Personal.—Dr. Thomas W. Nale, director of the division of maternal and child hygiene of the West Virginia State Department of Health, Charleston, has resigned to accept a position with the Carbide and Carbon Chemicals Corporation in South Charleston. Dr. Henry R. Dupuy, formerly of Oakland, Md., has been appointed health officer of Berkeley County. Dr. William A. Bevaqua, Parkersburg, has resigned as health officer of Wood County to enter private practice in Parkersburg.

District Meeting with Tuberculosis Association.—The sixth councilor district of the West Virginia Medical Association held a joint meeting with the West Virginia Tuberculosis and Health Association at Beckley, September 17-18. Guest speakers were Drs. Harry E. Kleinschmidt, director of health education of the National Tuberculosis Association, New York, who discussed "Tuberculosis in General Practice," and Jay Arthur Myers, Minneapolis, who delivered the George C. Rowell Memorial Address at a dinner meeting.

WISCONSIN

Course on Geriatrics.—The Medical Society of Milwaukee County has announced a course of postgraduate lectures on geriatrics to be given at Marquette University School of Medicine in November with the following speakers:

- Dr. Jacob Meyer, Chicago, Gastroenterology in the Aged.
- Dr. Oscar T. Clagett, Rochester, Minn., Treatment of the Aged from the Surgical Angle.
- Dr. George M. Piersol, Philadelphia, The Problem of Aging from the Internist's Angle.
- Dr. Hans H. F. Reese, Madison, The Central Nervous System in the Aged.

GENERAL

Journal to Publish Summaries in Spanish.—The *American Review of Tuberculosis* announced in its September issue that summaries of its original papers are to be added in Spanish translation, beginning with the October issue. The new plan will be carried out with the cooperation of Aristides A. Moll, M.A., secretary of the Pan American Sanitary Bureau, Washington, D. C., who will prepare or revise the Spanish translations.

New President of Drug Firm.—Mr. Erwin F. Fauser, general manager of the Australian branch of Frederick S. Stearns and Company, Detroit, manufacturing pharmacists, has been appointed president and general manager of the firm. He succeeds Mr. E. V. Fraenkel, who resigned. Mr. Fauser has been with the firm since 1913 and has been in Sydney, Australia, as assistant manager and general manager of the Australian branch since 1927.

Social Hygiene Association Disclaims Film.—The American Social Hygiene Association has issued a statement concerning a film entitled "Dust to Dust," said to be in circulation in various theaters throughout the country. At the showing some one gives out pamphlets and other literature, it is believed. It is thought that the sponsors of the film may be implying that the association is promoting or endorsing the picture. The statement says "We wish to make it clear that such film is not under our sponsorship, nor do we approve of any picture, and we certainly do not have any relationship of any kind with the group that is showing the film 'Dust to Dust' as part of their show." The association asks health departments and social hygiene agencies to inform the headquarters at 1790 Broadway, New York, if they should become aware of the showing of the film.

Aid to British Pharmacists.—In response to a request from the British Pharmaceutical Society for aid in its efforts to help its members who have suffered losses and injuries in air raids, a group of pharmacists has registered with the U S Department of State under the title of "Aid to British Pharmacists" to make assistance available to their British colleagues. There is no formal organization of the group except the selection by unanimous vote of a treasurer, who will receive, acknowledge and disburse all donations received. It is suggested that checks be made to the order of "Aid to British Pharmacists" and sent to the treasurer, Mr Samuel L Hilton, 1033 Twenty-Second Street NW, Washington, D C. The announcement explains that, although the need for supplies and equipment is great, it is not feasible to accept such donations because of transportation difficulties. It is pointed out that many business enterprises have been wiped out by the demolition of stores, and owners have been killed, leaving their dependents without support except that furnished by sympathetic friends and relatives. Members of the group sponsoring "Aid to British Pharmacists" are James H Beal, Ph G, Fort Walton, Fla., Ernest Fullerton Cook, Ph M, Ivor Griffith, Ph M, and Ambrose Hunsberger, Ph M, Philadelphia, Andrew G DuMez, Ph D, Baltimore, Robert P Fischelis, Ph M, Trenton, N J, J Leon Lascoff, Pharm D, New York, Evander F Kelly, Pharm D, and Mr Hilton, Washington, D C.

Academy of Ophthalmology and Otolaryngology.—The forty-sixth annual meeting of the American Academy of Ophthalmology and Otolaryngology will be held in Chicago at the Palmer House, October 19-23, under the presidency of Dr Frank R Spencer, Boulder, Colo. Dr Perry G Goldsmith, Toronto, Ont., will be the guest of honor. A feature of the meeting will be a national defense dinner at which the speakers will be Sir Harold Gillies of London, Dr Irvin Abell, Louisville, Ky., chairman of the American Medical Association's Committee on Medical Preparedness, on "The Role of the Physician in the National Defense Program", Dr Burt R Shurly, Detroit, chairman of the academy's preparedness committee, "The Role of the Academy in National Defense," and Dr Louis H Bauer, Hempstead, N Y, "Aviation Medicine." Dr Samuel J Kopetzky, chief of the medical division of the Selective Service System for New York City, will be narrator for a group of motion pictures presented by courtesy of the U. S Army and Navy. Among speakers on the scientific program will be:

Dr Everett L Goar, Houston, Texas, An Evaluation of Recent Therapeutic Agents in Ophthalmology
Dr Alfred W Adson Rochester, Minn., Surgical Treatment of Vascular Diseases Altering the Functions of the Eye
Dr William F Petersen, Chicago, Otolinological Problems and the Weather
Dr John M Converse, New York, Injuries in Air Warfare
Dr Phillips Thygeson, New York, Treatment of Staphylococcal Blepharitis
Dr Charles T Porter, Boston, Practical Uses of Chemotherapy in Ear, Nose and Throat Work
Dr Rea E Ashley, San Francisco, The Use of Urea in Certain Diseases of the Ears, Nose and Throat

At the opening general session there will be a symposium on vertigo presented by Drs Francis Heed Adler and Bernard J Alpers, Philadelphia, and William J McNally, Montreal, Que. Mornings of the meeting will be devoted to instructional courses.

Meeting of Obstetricians and Gynecologists.—The thirteenth annual meeting of the Central Association of Obstetricians and Gynecologists will be held at the Hotel Roosevelt, New Orleans, October 2-4. The speakers will be:

Dr Albert W Diddle, Iowa City, Clinical Application of Ergonovine Its Use During the Third Stage of Labor
Drs John A Haugen and Claude J Ehrenberg, Minneapolis, Diaphragmatic Hernia in the Newborn
Dr Curtis J Lund, Madison, Wis., Relation of Inhalation Analgesia and Anesthesia to Asphyxia Neonatorum
Drs Lawrence M Randall, Sim B Lovelady and Fletcher S Sluder Jr, Rochester, Minn., Uterine Bleeding Due to Benign Lesions
Dr Harley E Anderson, Omaha, Use of Uterine Packs Impregnated with Sulfanilamide
Dr Everett D Plass, Iowa City, Obstetric Syphilis
Dr Guy S McClellan, Nashville, Tenn., A Review of Seventy Five Cases of Eclampsia with Particular Reference to Late Cardiovascular Renal Effects
Dr John H Morton, Chicago, Premature Rupture of the Membranes
Dr Irving F Stein, Chicago, Gynecography in the Diagnosis of Ectopic Pregnancy
Dr William O Johnson, Louisville, Ruptured Ectopic Pregnancy
Dr Philip T Williams, Philadelphia, Nutrition Study in Pregnancy, Graduate Education in Obstetrics
Dr Maxwell E Latham, New Orleans, Postgraduate Hospital Teaching Program Through Consultation Service in Community Hospitals
Dr Laman A Gray, Louisville, Clinical Evaluation of Pregnant Mare's Serum Hormone
Dr Phillip C Schreier, Memphis, Office Curettage for Prolonged and Resistant Puerperal Bleeding
Dr Joseph W Kelso, Oklahoma City, Complete Laceration of the Perineum and the Repair
Drs Clarence Leon Wilson and Henry Close Hesseltine, Chicago, Effect of Lymphogranuloma Venereum on Pregnancy, Labor and Fetus

There will be two scientific sessions conducted at Charity Hospital, presented by local physicians. Dr Thomas B Sellers, New Orleans, will deliver his presidential address Friday evening at the annual banquet on "Louisiana's Contribution to Obstetrics and Gynecology."

CANADA

Canadian Medical Election.—Dr Albert E Archer, Lamont, Alta., was chosen president-elect of the Canadian Medical Association at the annual meeting in Winnipeg in June, and Dr Gordon S Fahim, Winnipeg, became president. The 1942 meeting will be held in Jasper Park, Alberta.

Committee on Industrial Medicine.—The Canadian Medical Association at its annual meeting in Winnipeg in June established a committee on industrial medicine with Dr John G Cunningham, Toronto, as chairman. Its purposes in general were said to be to survey the situation and define the scope and objectives of industrial medicine, to consider the qualifications and training of physicians and nurses for services in this special branch and to take stock of the personnel and training situation. It was recommended that facilities be established in war industries for preemployment examination of workers, medical supervision of conditions of work and special examination of those already employed for early diagnosis and control of disease and maintenance of health.

LATIN AMERICA

Radioactive Phosphorus Sent to Peru.—Small shipments of radioactive phosphorus produced by the cyclotron at the University of California, Berkeley, have been sent by air to Lima, Peru, the *New York Times* reported, September 13. The artificially produced radioactivity lasts about two weeks and, since air transportation takes the phosphorus to Peru within two or three days after its manufacture, the material still has a useful period of about ten days, it was said.

Institute of Hygiene Established in Ecuador.—Aided by grants from the Rockefeller Foundation the national government of Ecuador has established a National Institute of Hygiene in Guayaquil as a part of the national department of health. A building has already been constructed by the government, and the Rockefeller Foundation will provide funds for equipment and contribute to the salaries of the personnel and to the general expenses. The foundation will continue its support on a decreasing scale for five years until the government takes over full responsibility. It will also provide fellowships for the training of personnel. The first director will be Dr Atilio Macchiavello of Chile, who will hold the position for two years to complete the organization. Dr Juan A Montalvan, a member of the staff of the health department, will then become the director. Dr Montalvan is now in the United States in training for the position. There will be departments of tropical pathology, bacteriology and immunology, epidemiology, pathology and diagnosis, chemistry and food analysis, control of biologic products, production of biologic products and a number of general services. The Rockefeller Foundation has granted fellowships for the present year to Mr Jose Crusellas Ventura, who is to take charge of the department of chemistry and food analysis, and to Dr V Mosquera Ferres, who will be director of the department of pathology and diagnosis. Both are now in the United States visiting and studying in various institutions.

FOREIGN

Funds for Paderewski Hospital.—Funds collected in many parts of the United States for the Paderewski Testamental Fund amounted to \$10,922 during July and August, the *New York Times* reported. A remittance of \$7,000 was sent to the Paderewski Hospital in Edinburgh, Scotland, recently established in connection with the Polish medical school there. Other funds were sent for Polish relief in London, Switzerland and Sweden.

CORRECTION

Fifteen Trainees in Each Hundred Rejected.—In the Medical Preparedness Section of *THE JOURNAL*, September 13, page 941, appeared an announcement from the War Department in which it was said that fifteen men out of every thousand examined for military training during March and April were rejected. It has been pointed out that the statement should have been "fifteen trainees in each hundred."

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 26, 1941.

Medical Problems of Flying in the Stratosphere

The use of airplanes known as American fortresses at a great height has brought up the problems of flying in the stratosphere. Not only have the engines to be supercharged but measures have to be taken to enable the crews to withstand the great cold and the highly rarefied atmosphere. At 36,000 feet the thermometer falls to minus 56.5 C. and the oxygen pressure is too low for respiration. Thus man as well as engine must be supercharged. The crews are all picked men, and the medical officer of the airdrome has himself flown in one of the fortresses to observe the reaction of the crew. More than 80 per cent of the men tried have been found unable to fly at the great height. Any one with fat on him is quite unfit. The crews are given a course in pressure chambers before the flying. In these they regulate their own oxygen supply and are told to let themselves become unconscious for a few seconds at least once, so that they may realize that it is nothing to be afraid of and become "oxygen conscious." A tingling below the knee and in the ankles is the most common sensation when climbing to a great height, and above 20,000 feet almost every one has a stomach ache for a short time. Badly filled teeth ache at above 25,000 feet, and so the crews require the regular attention of the dentist. The highly trained crews who took part in the recent attack on Brest did not report any serious discomfort. One man said that he had a feeling around his mouth and nose as though plaster of paris had dried on his face. The men in the rear of the aircraft, where they would feel the cold most, wore electrically heated clothing.

The Envelop Method of Treating Burns and Wounds

The treatment of burns and wounds by a new method, introduced by Surgeon Lieutenant Commander John Bunyan, is attracting attention. He holds that in the past success has been diminished by destructive antiseptics, by frequently changed dressings, painful to remove and destructive of adherent newly formed tissue, and by immobility and disuse of the part. A dressing which does not require changing is therefore desirable. It should be flexible, frictionless, bland to the tissues and transparent, so that progress may be observed. With the help of a manufacturer, envelopes of coated silk, shaped for different parts of the body, were produced. For cleansing Bunyan uses a solution of electrolytic sodium hypochlorite, because it is the least irritant. The envelop is provided with an inlet and an outlet, so that a lesion of any part may be irrigated by inserting a glass nozzle. A simple adhesive seal is fixed to the proximal end of the envelop at the factory, so that by removing the protective gauze one produces a watertight seal by lightly pressing the adhesive to the limb and covering with an adhesive bandage.

So far the treatment has been mainly used for burns. Applied to a first degree burn the solution immediately relieves pain, and covering with adhesive plaster is all that is necessary. Second and third degree burns are washed with the solution, the envelop is applied and the solution is run through the envelop through the inlet. This irrigation is repeated three times a day. Good results from this method are reported from the Middlesex, King's College and London hospitals. The verdict of Mr. J. W. Hannay at the London Hospital is that other methods will heal a burn or bring it to the stage of graft-

ing within comparable degrees of time, attention and discomfort, provided all goes well. But the great value of envelop irrigation is that in no case treated by it, with or without cleansing in the operating room, will anything more than mild infection occur.

Compensation for War Service Injuries

The Ministry of Health has issued a memorandum on war service injuries, which are distinguished from "war injuries" by not being confined to injuries caused by the enemy or in combating the enemy. A war service injury is an injury sustained by a civil defense volunteer and is defined as "any physical injury which the minister of pensions certifies to have been shown to his satisfaction to have arisen out of and in the course of the performance by the volunteer of his duties as a member of the civil defense organization to which he belonged at the time." Both war injury and war service injury, as defined, mean only physical injuries. Injury to the brain or injury to the eyesight as a direct result of concussion, shock from direct exposure to bomb explosion or blast in which the incapacity starts from the time of the incident, collapse from heart failure as a direct result of an air attack and similar injuries may be accepted as physical injuries. But the definition does not cover neurasthenia and similar sicknesses in which the symptoms are induced merely by apprehension and fears occasioned by enemy activity. Physicians are therefore directed not to issue a war or war service injury certificate in such cases. But if the patient is an insured person he would be entitled to health insurance benefits in the ordinary way. On the other hand, a person rendered incapable by a war injury or war service injury is, if insured, disentitled to sickness benefit under the insurance act for twenty-six weeks.

Bomb Damage to the University of London and Its Hospitals

In his annual report, the principal of the University of London, Mr. H. L. Eason, states that the intensive air raids on London fully justified the policy of dispersal adopted by the schools of the university in the summer of 1939. The damage to university buildings has been so severe and widespread that if the schools had been in London the work would have virtually come to an end for a time. The two most important schools are University College and King's College, which are each attached to a great hospital. University College has been repeatedly attacked by high explosive and incendiary bombs, and a large part of its buildings have been destroyed. About a hundred thousand of its books in the library have been damaged beyond repair by fire and water. King's College has been damaged to a less extent, but two of its hostels and its library have been severely damaged. About one third of Bedford College (for women) has been destroyed by fire. Birkbeck College has been damaged twice, many laboratories, the operating room, books and equipment being destroyed. Damage to a less degree has been done to King's College of Household and Social Science, the Imperial College of Science and Technology and the School of Oriental Studies. The London School of Hygiene has been severely damaged by high explosives.

The hospitals of the medical schools of the university have been severely damaged almost without exception, but, owing to the decentralization of staff, students and patients under the emergency medical service, medical education has been maintained at a high level. The Medical School of St. Bartholomew's Hospital has been almost completely destroyed, and the London School of Medicine for Women has been damaged considerably. The buildings of other medical schools have sustained little damage. Notwithstanding decentralization and delays and difficulties due to disturbance of communications, the work of the university has been maintained at a high level.

The number of internal students in 1939-1940 was 25 per cent less than in 1938-1939 and this year will probably be 40 per cent below the prewar figure. In spite of exile in strange places and air raids, the performance of students at examinations has little changed, the percentage of passes and honors being much the same as in peacetime.

SWITZERLAND

(From Our Regular Correspondent)

July 15, 1941

Swiss Society for Internal Medicine

At a recent meeting of the Swiss Society for Internal Medicine its chairman, Dr O Roth of Winterthur, discussed the effects of cold, especially congelation urticaria. This type of urticaria does not differ clinically from other forms, but it is not of allergic etiology and yet is due to hypersensitivity. The anaphylactic process takes place in the cell. The histamine contained in inactive form in the cell is liberated by a hypersensitive condition and develops into a reaction. Dermatitis artificially induced in human beings sensitive to congelation urticaria is considerably more pronounced than in normal controls. Moreover, a true circulatory collapse can be brought about by means of cold similar to that known to be caused by histamine. In 1 case in which a human control remained in a bath at 60.8 F for three minutes a collapse occurred which lasted about ten minutes. A histaminase preparation, therefore, may be employed in congelation urticaria.

G Schonholzer of the medical clinic of the University of Berne discussed cardiac action and intrathoracic pressure. B Steinmann discussed the relations between cardiac output and the electrocardiogram.

J E W Brocher of Geneva spoke on lesions of the lumbosacral intervertebral disks. Walking in an erect position places a serious strain on the lowest disks. Falling on one's back or lifting heavy burdens frequently causes ruptures in these disks and anterior and posterior hernias of the nucleus pulposus. The clinical manifestations are lumbago, backache, sciatica and signs of nerve and root irritation. In the roentgenogram occasionally the following modifications are seen: narrowing of the last or next to the last intervertebral disk, reactive osteophytic proliferation at the sacrum, arthritic changes in the vertebral joints, especially in the lumbar region, narrowing of the articular spaces and forward or backward subluxation of the lowest lumbar vertebra. Ordinary roentgenograms may be completely negative. Myelography, on the other hand, may often disclose changes. In the presence of a hernia of the nucleus pulposus with a rearward direction, depression of the contrast medium can be observed. Such hernias can exert pressure on nerves and roots and cause severe radiating pains. Myelography is therefore indicated whenever severe, intractable pain occurs in the lumbar area or when radiating pains are encountered, also in cases of narrowing of the intervertebral disk, osteophytic growth in the sacral regions and in subluxation of the lowest vertebra. In most cases therapy is surgical. However, smaller hernias of the nucleus pulposus may show an extensive spontaneous reduction.

R Hugglin discussed lung infiltration with positive Wassermann reactions. The disease is a peculiar atypical form of pneumonia running a subacute course and is associated with a strongly positive syphilitic reaction. The symptomatology is exceedingly uniform. Usually there is a history of general ailments and signs of bronchitis for days or weeks. Serious signs of disease are almost altogether absent. Examination discloses mostly an extensive diffuse bronchitis with a circumscribed focus of infection. The temperature is either afebrile or subfebrile. The roentgenogram reveals cloudy infiltrations of irregular contours and spotty stripes with no predilections as to site. Hugglin investigated the behavior of the Wassermann test in

a large number of patients affected with pneumonia and pulmonary tuberculosis. Among 700 croupous patients and such presenting influenzal pneumonia there were seventeen positive reactions definitely due to syphilis. In 19 highly febrile cases he found only one or, at the most, two reactions which had to be interpreted as nonspecific and which merely suggested a reaction or were mildly positive. Only one strongly positive reaction was seen. The findings at necropsy were unable to explain it. In 403 other cases there were twelve nonspecific reactions, but in only one of these could the strongly positive Wassermann reaction be determined as not due to syphilis. Strongly positive syphilitic reactions in cases of atypical pneumonia running a similar clinical course are all the more remarkable. According to the investigations of Professor Grumbach, of Zurich, the *Haemophilus influenzae* bacillus is to be regarded as the causative agent. Tuberculosis could never be determined nor were spirochetes found. There is definitely no connection with influenza.

In the second scientific session Professor Kairer, chemist of Zurich, surveyed the chemistry of the vitamins and of some enzymes. G Bickel of Geneva discussed vitamin deficiencies in medical practice. Vannotti and A Delachaux of Lausanne discussed lactoflavin and F Kollet of Zurich vitamin K. M Demole of Geneva discussed pancreas insufficiency in various dyspeptic conditions.

Personals

Dr K Lenggenhager has been appointed director and associate professor of the surgical clinic of the University of Berne, succeeding Professor Matti Lenggenhager who was for many years an assistant of Professor de Quervain. His special interests lie in the field of thrombosis and blood coagulation.

Dr Clairmont, for many years professor of surgery, at the University of Zurich, has retired. Dr Alfred Brunner, chief surgeon of the surgical division of the cantonal hospital of St Gall, has been named as his successor. Brunner was for a number of years an assistant of Professor Sauerbruch and has made contributions to the surgical treatment of tuberculosis.

Prof E Oppikofer, for many years professor of otolaryngology at the University of Basel, has retired on account of old age. Dr Erhard Luscher, associate professor at the University of Berne, was appointed as his successor and as director of the clinic.

Marriages

EDWARD H BREGMAN, Tombstone, Ariz, to Miss Hazel McGrath of Winooski, Vt, at Nogales, Ariz, January 22.

CHRISTOPHER PARNALL JR to Miss Jean Folmsbee, both of Rochester, N Y, in Washington, D C, June 14.

JAMES P MORAN, New London, Conn, to Miss Grace McNamara of Poughkeepsie, N Y, June 7.

DAVID A DAVIS, Springfield, Tenn, to Miss Alice Rebecca Roper at Winter Garden, Fla, in June.

KENNETH JEROME CHILDRY to Miss Alice Palmer Cottingham, both of Richmond Va, June 14.

JOHN OSBORNE McNEILL, University, Va, to Miss Rose Lee Williams of Charlotte, N C, June 16.

JULIAN W ZINN, Dwight, Ill, to Mrs Hazel A Tatrow of Buffalo, N Y, in St Louis, May 9.

WILLIAM L VENNING JR, Durham, N C, to Dr Laura E Ross of Charlotte, June 13.

JOHN NAE COMPTON, Little Rock, Ark, to Miss Margaret Ann Lake of Gould, June 3.

EDMUND W McELIGOTT, Chadron, Neb, to Miss Viola Shadbolt at Gordon, May 7.

PHILIP A FUGUA, Joliet, Ill, to Miss Alice Ruth Campbell of Omaha, June 15.

WILLIAM P WARD to Miss Dorothy Stoddart, both of Lincoln, Neb, June 7.

WALTER M REINER, Omaha, to Miss Margaret Borg of Furl, June 4.

Deaths

Walter Stuart Woodruff ☉ Colebrook, Conn.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1906; formerly instructor in otolaryngology at his alma mater; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; consulting otolaryngologist, New Rochelle (N. Y.) Hospital; past president and secretary of the Westchester County (N. Y.) Medical Society; served during the World War; aged 58; died, August 19.

Ira Eustace Harder, Dallas, Texas; Kansas City College of Medicine and Surgery, Kansas City, Mo., 1918; member of the State Medical Association of Texas; instructor in clinical surgery, 1929-1930 and assistant professor from 1930 to 1932 at Baylor University College of Medicine; fellow of the American College of Surgeons; served during the World War; formerly on the staff of the Parkland Hospital; aged 45; died, August 18, in St. Francis Hospital, San Francisco.

Jerome Martin Ziegler ☉ New York; Columbia University College of Physicians and Surgeons, New York, 1918; fellow of the American College of Surgeons; for many years police department surgeon; aged 47; chief of the genitourinary clinic, Mount Sinai Hospital; on the staffs of the Sydenham Hospital, Beth David Hospital, Riverside Hospital and the Montefiore Hospital, where he died, August 25, of sarcoma.

August Hermsmeider Wittenborg, Memphis, Tenn.; College of Physicians and Surgeons, Memphis, 1910; chief of the division of anatomy, histology and embryology and professor of anatomy at the University of Tennessee College of Medicine; member of the American Association of Anatomists; aged 57; died, August 21, in the University Hospital, Ann Arbor, Mich., of myocardial infarction.

John Randolph Tucker Carmichael, Charlottesville, Va.; University of Virginia Department of Medicine, Charlottesville, 1936; first lieutenant in the medical reserve corps of the United States Army, stationed at Fort George G. Meade, Md.; aged 29; was found dead, August 29, of illuminating gas poisoning, self administered, during temporary duty in Washington, D. C.

George Maitland Biggs, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1904; professor emeritus of otolaryngology at his alma mater; fellow of the American College of Surgeons; served with the Canadian Army during the World War; aged 60; for many years on the staff of the Toronto General Hospital, where he died, August 23.

William Thomas Callery, Weehawken, N. J.; Fordham University School of Medicine, New York, 1913; member of the Medical Society of New Jersey; served during the World War; on the staffs of St. Mary's Hospital, Hoboken, and the Hudson County Hospital, Secaucus; aged 54; died, August 11, of carcinoma of the sinuses.

Charles Ferguson Hamner, Salmon, Idaho; National Medical University, Chicago, 1905; member of the Idaho State Medical Association; at one time secretary of the advisory board of the Idaho Department of Law Enforcement; aged 64; died, August 20, of carcinoma of the colon and liver.

Frank Carl Schurz Blessing, Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1899; member of the Medical Society of the State of Pennsylvania; for many years on the staff of the Southside Hospital; aged 65; died, August 19, in the Mercy Hospital of streptococcal septicemia.

Rayburn Castle Austin ☉ Ellettsville, Ind.; Graduate School of Medicine of the Division of the Biological Sciences, University of Chicago, 1932; president of the Monroe County Medical Society; aged 43; died, August 26, in Asheville, N. C., of injuries received in an automobile accident.

John Woodrow Barnhart, Clendenin, W. Va.; Medical College of Virginia, Richmond, 1939; first lieutenant in the medical reserve corps of the United States Army, Station Hospital, Fort Hayes, Columbus, Ohio; aged 28; died, August 18, of cerebral hemorrhage.

Joseph Swisher Cunningham, Gibson City, Ill.; Illinois Medical College, Chicago, 1902; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1907; member of the Illinois State Medical Society; aged 67; died, August 21.

Jethro D. Davidson ☉ Teague, Texas; Baylor University College of Medicine, Dallas, 1911; secretary of the Freestone County Medical Society; member of the school board; owner of a sanatorium bearing his name; aged 54; died, June 19, of brain tumor.

Thomas Franklin Dodd, Alexandria, Va.; Medical College of Virginia, Richmond, 1908; member of the Medical Society of Virginia; served during the World War; for many years connected with the Veterans Administration; aged 62; died, August 14.

Cloy Garver Brumbaugh ☉ Huntingdon, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1907; fellow of the American College of Surgeons; on the staff of the Blair Memorial Hospital; aged 57; died in August of pneumonia.

Charles Florent Puterbaugh, Tipp City, Ohio; Medical College of Ohio, Cincinnati, 1909; member of the Ohio State Medical Association; formerly coroner of Darke County; aged 69; died, August 16, of diabetes mellitus and heart disease.

John Victor Cowden, Butler, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1896; member of the Medical Society of the State of Pennsylvania; aged 71; died, August 19, in a hospital at Hamilton, Ont., Canada, of pneumonia.

William Christian Wagner, Traer, Iowa; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; member of the Iowa State Medical Society; aged 69; died, July 20, of coronary thrombosis.

Luther La Fayette Wike, Madison, Ala.; University of Tennessee Medical Department, Nashville, 1888; member of the Medical Association of the State of Alabama; aged 86; died, August 15, of coronary heart disease and arteriosclerosis.

Grace McCoskey ☉ Stockton, Calif.; Stanford University School of Medicine, San Francisco, 1914; for many years on the staff of the Stockton State Hospital; aged 57; died, August 14, in the Dameron Hospital of carcinoma of the liver.

Arthur Churchill Strong, Burlington, Iowa; State University of Iowa College of Medicine, Iowa City, 1909; served during the World War; aged 58; died, August 11, in Tucson, Ariz., of heart disease and pulmonary tuberculosis.

Ambrose Henry Witherspoon, Lawrenceburg, Ky.; Jefferson Medical College of Philadelphia, 1894; formerly local health officer; aged 71; died, August 14, in the Good Samaritan Hospital, Lexington, of hypertensive heart disease.

John J. Haydel, Plaquemine, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1901; member of the Louisiana State Medical Society; aged 62; died, June 25, of carcinoma of the stomach.

Frederick Norman Nichols ☉ Denton, Md.; University of Maryland School of Medicine, Baltimore, 1902; past president of the Caroline County Medical Society; aged 62; died, August 22, of multiple myeloma.

Frederick Nathaniel Bonine, Niles, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1886; aged 77; died, August 22, of arteriosclerotic cardiovascular disease and hypertension.

August Friedrich Knoefel ☉ Terre Haute, Ind.; University of Louisville (Ky.) Medical Department, 1903; on the staff of the Union Hospital; aged 61; died, August 27, of coronary thrombosis and myocarditis.

Francis Field Ellinwood, Princeton, N. J.; Bellevue Hospital Medical College, New York, 1891; aged 75; died, August 6, in the Morristown (N. J.) Memorial Hospital of carcinoma of the prostate.

Harriet J. Clark, Seattle; Saginaw Valley (Mich.) Medical College, 1899; aged 80; died, August 19, in the Providence Hospital of carcinoma of the rectum, diabetes mellitus and hypertension.

Elmer Jackson Hendren, Louisville, Ky.; University of Louisville School of Medicine, 1941; intern at the Louisville City Hospital; aged 29; was killed, August 16, in an automobile accident.

George Abram Zimmerman ☉ Harrisburg, Pa.; Baltimore Medical College, 1910; served during the World War; aged 61; died, August 15, in the Polyclinic Hospital of cerebral hemorrhage.

Howard Miller, Glen Rock, N. J.; Albany (N. Y.) Medical College, 1881; aged 83; died, July 3, in the General Hospital, Paterson, of bronchopneumonia, myocarditis and carcinoma of the prostate.

John William Huff, Baker, Ore.; Rush Medical College, Chicago, 1881; formerly health officer; aged 83; died, July 6, in St. Elizabeth Hospital of hypostatic pneumonia and peritonitis.

Wilfred John Hewson, Alma Center, Wis.; Northwestern University Medical School, Chicago, 1908; aged 57; died, August 7, in the Luther Hospital, Eau Claire, of heart disease.

Ellis Grover Kirby, Bowdon, Ga.; Atlanta Medical College, 1914; member of the Medical Association of Georgia; aged 56; died suddenly, August 8, of myocarditis.

Bureau of Investigation

STIPULATIONS

Agreements Between Federal Trade Commission and Promoters of Various Products

The following items are abstracts of stipulations in which promoters of "patent medicines," cosmetics or medical devices have cooperated with the Federal Trade Commission to the extent of agreeing to discontinue certain misrepresentations in their advertising. These stipulations differ from the "Cease and Desist Orders" of the Commission in that such orders definitely direct the discontinuance of misrepresentations. The abstracts that follow are presented primarily to illustrate the effects of the provisions of the Wheeler-Lea Amendment to the Federal Trade Commission Act on the promotion of such products.

Bliss Native Herb Tablets—These are put out by the Alonzo O Bliss Medical Company, Washington, D C, which in March 1940 signed a stipulation with the Federal Trade Commission promising to discontinue certain advertising misrepresentations. Among these were the use of the words "positive relief" or similar ones to imply that the product relieves upset stomach, gas bloating pains, acid risings, lost appetite, sour stomach and headaches due to constipation or other causes and to imply that the product will flush the bowels or kidneys, stimulate the liver, cause a faster elimination of kidney waste or is a treatment for the stomach, unless the last mentioned representation is limited to such action as it might have as a stomachic. In May 1940 another concern, Van Sant, Dugdale & Co, Inc., Baltimore, apparently an advertising agency, also promised the Commission that it would discontinue employing certain advertising misrepresentations similar to the foregoing ones, in the promotion of the Bliss tablets. There are on record no fewer than 19 cases in which federal courts have declared that this product has been labeled under false and fraudulent claims.

Cashmere Bouquet Soap—On July 6, 1940, the Federal Trade Commission reported that it had entered into a stipulation with the Colgate Palmolive-Peet Company, Jersey City, N. J., which promised to discontinue certain unwarranted representations in the sale of this soap. Among them were that either this soap or its lather will remove "every bit" of dirt and cosmetics from every pore, or that this soap is capable of causing the skin to become alluring, clear or smooth in cases in which such results will not be achieved by cleansing the skin.

Ce-Kelp—This "gift of nature" to man is put out by a Melvin E Page, trading as the Dental Research Company, Muskegon, Mich. In March 1940 Page signed a stipulation in which he promised the Federal Trade Commission to discontinue certain misrepresentations in the advertising of "Ce Kelp." Among these were that the product is "rich in minerals", that it prevents or corrects what physicians call the deficiency diseases; that heart trouble, tuberculosis, anemia, high and low blood pressure, hardening of the arteries, rheumatism, neuritis, arthritis, kidney and bladder trouble, frequent colds, nervousness, constipation, acidosis, pyorrhea, overweight and underweight, cataract or cancer is recognized or properly classified as being a deficiency disease, that the main cause of deficiency disease is lack of mineral elements in ductless glands, or that "Ce Kelp" or any other kelp product is "literally packed" with such essential elements. Page also promised to cease designating himself as "Dr." or "Doctor" unless it is clearly disclosed that he is a doctor of dentistry and not of medicine.

Companion Exerciser—In April 1940, Joe Bonomo, trading as Joe Bonomo Publications, New York, promised the Federal Trade Commission that he would discontinue certain misrepresentations in his advertising. Among these were that the use of an elastic device which he sold as the "Companion Exerciser" will cause a return of pep, vitality, energy or better complexion right from the start or in any specified time; that his course designated "Muscle Tension System" will make the user a real man quickly or give brawny strength, burly health or a "he-man" body, that his course designated "Complete Bonomo System" will enable one to excel in any form of sports or make the user a physical wonder, and that the "Beautify Your Figure" course will cause the user to acquire "inviting contours" quickly or in any specified time.

Dare's Mentha-Pepsin—This is a preparation of International Laboratories, Inc., Rochester, N. Y. In June 1940 this concern stipulated with the Federal Trade Commission that it would cease representing that the product is a competent treatment or effective remedy for stomach ailments, that any given amount of it will prove its efficacy in a definite time, and that it contains ingredients which will invigorate the stomach generally or are so combined with pepsin as to make the pepsin highly efficacious and speedy in its action. The concern also agreed to cease further use of the word "Pepsin" alone or with other words, to designate any preparation not containing sufficient pepsin as an active ingredient to possess therapeutic value because of it.

Dr. J. A. Dickey's Eye Water—James J. Durr, operating as Dickey Eye Water Company, Montgomery, Ala., promised the Federal Trade Commission in May 1940 to cease representing that this preparation is superior in beneficial qualities to any other preparation used for the same purposes; and that it is recognized as a standard preparation for the eyes and is capable of curing or healing.

Dr. Pierce's "Favorite Prescription" and "Golden Medical Discovery"—Advertising material issued by the World's Dispensary Medical Association, Buffalo, has stated that the first named product contains extracts of the roots of lady's slipper, black cohosh, blue cohosh, unicorn and Oregon grape root, with viburnum, and that the second one contains queen's root, stone root, cherry bark, blood root, Oregon grape root and sacred bark (cascara sagrada). The quantities of these drugs, however, were not named. In January 1940 the Federal Trade Commission reported that the Pierce concern had agreed to cease representing that "Dr. Pierce's Golden Medical Discovery" will keep the digestive system in tune, counteract excess acidity of the stomach or of itself build up the human system, relieve a weakened condition, increase weight, pep, energy, vigor or vitality, or is the one or only recognized tonic, or that "Dr. Pierce's Favorite Prescription" is of any appreciable value in relieving the pain or discomfort associated with menstrual distress, unless in direct connection therewith it is stated that such results may follow only when used for some length of time. The company further stipulated that it would desist from representing, by use of the word "Association" or words of similar import, that it is an association of doctors or medical men, or that complete medical advice is given to persons writing for it. In December 1939 a trade journal reported that the concern had changed its name to Pierce's Medicines, Inc.

Dr. Weaver's Nasal Filter—This product was represented by the Nasal Filter Company, Columbus, Ohio, to cure or prevent hay fever and relieve or prevent asthma and sinus trouble and also to ward off anthraxosis or provide a defense against colds or prevent all dust from entering the nostrils. In April 1940 the concern promised the Federal Trade Commission to discontinue these misrepresentations. The company has stated elsewhere that its so-called "Special Medicated Oil," which goes with the device, consists of 192 minims of wintergreen in a gallon of mineral oil. It seems rather preposterous, therefore, to speak of it as a medicated oil. The concern also has declared that this oil is used solely for its physical properties, through which it impregnates the wool fiber and causes the pollen and dust to adhere to the fiber rather than to be partially forced through the wool mats and thus into the nostrils.

El Panel Cuban Wonder Honey—This is put out by an Albert H. Hoffman, Tampa, Fla. trading as Hoffman Health Products Company. In August 1940 Hoffman promised the Federal Trade Commission that he would cease advertising that his honey has a natural lubricating effect that helps to eliminate waste and thus promotes better appetite and consequently better assimilation, that it has nine mineral elements which have special virtues in supplying mineral needs of the body or that it vitalizes, alkalizes and affords special virtues in the treatment of anemia and poor appetite, that it assists in relieving and overcoming attacks of asthma, bronchitis, colds, hay fever, sinus trouble or coughs other than local throat irritations, possesses remedial powers in the treatment of gastric ulcers and disorders of the bowels and colon or differs essentially from domestic varieties of honey in the matter of nutritional or therapeutic value.

"Eugenics and Sex Harmony" and "New Birth Control Facts"—These two books are sold by Pioneer Publications, Inc., New York. In April 1940 this concern signed a stipulation with the Federal Trade Commission agreeing to withdraw certain misrepresentations in its advertising. Among these were that the method outlined in "New Birth Control Facts" is dependable as a means of avoiding and of causing conception, and that the book contains a table of periods during which conception is impossible. In its stipulation the company admitted that as to a substantial number of persons the method outlined is not effective, and that for a substantial number there is at present no way of exactly computing the periods in which conception is impossible. The respondent agreed to cease representing that the method outlined is dependable in bringing about or avoiding conception, and that the book contains a table of information which, if followed, enables all users to compute a safe period.

Fertility Calendar—This is put out by one Edwin Rees, doing business as the Health Calendar Company, Cleveland. In October 1940 Rees signed a stipulation with the Federal Trade Commission in which he agreed to cease and desist from certain misrepresentations in his advertising. Among these were that conception may be completely controlled or partially controlled to any definitely stated percentage by using the "Fertility Calendar," a mechanical chart, or any other device designed for the purpose of making calculations necessary to practice the Ogino Knaus Law of Conception, that the problem of birth control is solved by using the Fertility Calendar or any similar device or by practicing the Ogino Knaus Law of Conception; that physicians are either unconscientious or disreputable by reason of having prescribed methods of birth control other than the Ogino Knaus Law of Conception method, that the use of methods of birth control other than the Ogino Knaus Law of Conception on prescription of competent physicians, in most cases and without substantial exceptions, results in pelvic infections and other ailments, and that the "Fertility Calendar," as compared with other devices designed for the same or similar purpose, is superior in the following respects. It applies to menstrual cycles of any length from twenty-one to thirty-six days, it tells the fertile and sterile days without any figuring, it is adjustable to months of any length, including the twenty-nine day month of February in leap year, and it requires only three simple moves to indicate the fertile and sterile days in any given case.

Firma-Tone—This is a product of Barbara Gould, Inc., New York. In August 1940 that concern stipulated with the Federal Trade Commission that it would discontinue certain misrepresentations in its advertising. Among these were that "Firma-Tone" is a competent treatment for conditions of relaxed facial contours, heaviness of the jaw line or flabby skin, enables the user to "hold the clean, firm contours of youth" or to have "youthful" contours of face and neck, stimulates, exercises, tones or strengthens the muscles of the face and neck, or gives "lasting

result." The company further agreed to cease using the designation "Firm Tone" for its product or to represent that use of such product may be relied on either to "firm" the facial or neck contour of the user or to "tone" the skin or muscles.

H. E. Clarke's Nasal Filter—This is put out by one H. E. Clarke, trading as H. E. Clarke Company, Pittsburgh. In July 1940 he stipulated with the Federal Trade Commission that he would discontinue certain advertising misrepresentations. Among these were that his device is of value in the prevention of any nasal irritation, except when caused by the inhalation of dust or other impurities through the nostrils, or that it will afford complete protection against nasal irritation which might result in such manner. Clarke further agreed to desist from exaggerating the extent to which his device will protect against or lessen the severity of any disease, ailment or condition and from representing that it is an effective agent in protecting against colds, that it is completely invisible when inserted in the nostrils, that generally physicians have recommended it, that the most filters used in his device are sterile, or that the patent application covering his product affords complete or full protection.

HF—The Pritchard and Thompson Advertising Agency, Inc., New Orleans, promised the Federal Trade Commission in January 1940 that it would discontinue advertisements which represent, directly or by implication, that "HF" is a remedy and a complete treatment or cure for athlete's foot, that other preparations are not beneficial in treating this condition or disease and will not reach the parasites causing it, and that the use of "HF" will keep a person "rid" of this disease or condition and eradicate the germs causing it. Other representations to be discontinued by the agency are that the use of "HF" will cause the itching accompanying athlete's foot to stop, that the product is world renowned and that more money has been spent for advertising it in a given time than for any other athlete's foot medicine. Previously, the Commission had announced, in August 1939, that Gore Products, Inc., New Orleans, which put out this preparation, had similarly promised to discontinue the misrepresentations in question.

Kru-Gon—This was advertised to be, among other things, a competent remedy for indigestion, gas pains, bloating, neuritis, rheumatism, nervousness, insomnia, kidney trouble and rundown condition and capable of removing poisons from the system in a natural manner, giving back health, ending attacks of indigestion, correcting kidney disorders, making the stomach function properly and giving relief after other remedies have failed. In January 1940 the Federal Trade Commission reported that D. S. B. and Hattie M. Evans, trading as Evans Drug Company, Springfield, Mo., which sells "Kru-Gon," and Medora Whitney, owner, and Robert B. Whitney, manager, trading as the Kru-Gon Company, Muncie, Ind., which manufactures the product and prepares the advertising claims, had promised to discontinue the foregoing misrepresentations.

Lovalon Hair Rinse and Lovalon Oil of Lemon Hair Rinse—In July 1940 Marcus Lesonc, Inc., L. J. Marcus and John A. Lesonc, San Francisco, promised the Federal Trade Commission to stop making certain misrepresentations in the sale of these products. Among these were that "Lovalon Hair Rinse" is a vegetable preparation, that it gives hair more life, that it is permanent in effect and enables one to say goodbye to dull or drab hair, that "Lovalon Oil of Lemon Hair Rinse" accomplishes the same results as a lemon rinse, that it restores natural loveliness of the hair or that it invigorates the scalp or hair. "Lovalon Hair Rinse" was granted a United States patent some years ago. The patent specifications indicate that the product, at least at that time, was nothing more than a mixture of 10 pounds of commercial tartaric acid crystals or powder mixed with 3 teaspoons of aniline dye and made into a powder. Just which of the aniline dyes is used in this product was not stated, but doubtless it varies with the color that the purchaser desires.

Mellquist Massage Balm—In August 1940 the Federal Trade Commission announced that it had signed a stipulation with the Mellquist Reducing and Cosmetic Salons, Inc. (a New York Corporation), Mellquist Reducing and Cosmetic Salons, Inc. (an Illinois Corporation) and Erik W. Mellquist, New York, individually and as an officer and director of both corporations. In this stipulation Mellquist and his concerns promised to cease and desist from using in their advertisements and advertising matter, or in any other way, statements or representations the effect of which tends or may tend to convey to purchasers the belief that use of the product in and of itself will break down fat cells and strengthen tissues, or in any way reduce the user's weight or otherwise solve the user's reducing problems.

Nestle Colorinse and Nestle Shampoo—The first named is a hair dye and both are put out by the Nestle LeMur Company, New York. In May 1940 this concern signed a stipulation with the Federal Trade Commission to discontinue certain misrepresentations in the sale of these products. Among them were that the "Colorinse" is not a dye, that it improves the natural color of the hair or in any manner imparts youth to the hair or recaptures the youthfulness of the hair, or that it is a vegetable compound, that "Nestle Shampoo" adds a natural sheen to the hair or that its use helps overcome or is a corrective or cure for dandruff or aids in stopping or checking falling hair, or that the use of it alone will minimize excessive loss of hair due to scurfed or sluggish scalp.

Odorono—In February 1940 the Odo Ro No Company, Inc., New York, promised the Federal Trade Commission to cease representing in any manner that the results to be obtained from the use of Odorono are unqualified, immediate and absolute, as implied by such words and phrases as "it is possible," "insure," "stop," "instantly" and "always." The Odo Ro No Company further agreed not to publish or cause to be published any testimonials containing representations contrary to the foregoing agreement.

Palmolive Soap—This was advertised by the Colgate Palmolive Peet Company, Jersey City, N. J., and its subsidiary, Kirkman and Son, Inc., New York, under certain claims to which the Federal Trade Commission objected. Among these were that the product contains special protective qualities all its own or not present in any other soaps, is composed wholly or in part of edible olive oil or of the grade of olive oil used for bathing new born babies, that the "soft, smooth complexion" of the Dionne quintuplets are directly the result of "Palmolive Soap," and that use of this soap will keep the skin young, thoroughly cleanse the pores or assist in any way toward nourishment of the skin. In July 1940 the concerns mentioned promised the Federal Trade Commission to discontinue the foregoing misrepresentations and also to cease advertising that persons purporting to be authorities, who have not professionally used and actually approved "Palmolive Soap" or other products, and whose names appear on published testimonial letters or endorsements thereof have inferentially or otherwise based such testimonials or opinions on their own professional experience, use and controlled laboratory tests. Further they agreed to discontinue representing by use of the unqualified statement "Made with olive oil" as descriptive of "Palmolive" soap or shaving creams, or by assertions of like import, that the oil or fat content of such products is wholly or predominantly olive oil.

Raz-Mah—In June 1940 the Armand S. Weil Co., Inc., Buffalo, an advertising agency, signed a stipulation with the Federal Trade Commission agreeing to cease representing in its advertisements for "Raz-Mah" that this product of Templetons, Inc., Buffalo, will almost instantly relieve sufferers from wheezy, difficult breathing, that lay fever victims will get speedy relief from sneezing, itching and excessive watery secretions in the nose and eyes, that coughs due to bronchial irritation will be quickly relieved, and that bronchial irritations will be prevented from developing into asthma. Previously, in October 1939, Templetons, Inc., likewise had promised the Federal Trade Commission to discontinue these misrepresentations in its advertising.

Schweizer Tee—This is put out by a Robert J. Schwyh, trading also under the name Schweizer Tee. In March 1940 Schwyh promised the Federal Trade Commission to cease representing that his product is an effective treatment for diabetes, is prescribed or recommended by doctors, helps the organs to function normally, effects a reduction of sugar or makes a broader diet possible.

Sem-Pray Jo-Ve-Nay—In April 1940 the Sempy Jo-Ve-Nay Company, Grand Rapids, Mich., stipulated with the Federal Trade Commission that it would cease representing that this product is a complete beauty treatment, will smooth away or remove lines from the skin, change the normal texture of the skin to make it finer, keep the skin young, serve as a competent treatment for blackheads and remove all traces of foreign matter from the pores. This may be the same product which used to be sold from Grand Rapids under the name Sempy Jo-Ve-Nay by the Marietta Stanley Company and which the North Dakota Agricultural Experiment Station years ago reported to be apparently a mixture of some vegetable oil or cocoa butter, with beeswax or spermaceti, plus about 15 per cent of paraffin. That authority added to its report on the product the comment—"It is rather difficult to understand how paraffin, or beeswax, or spermaceti would not close up the pores, or, how anything in this preparation could be considered as 'nourishing the starved tissues' or cleansing and opening the pores of the skin, or, what there is that could be expected to remove the blemishes that mar the features."

Vitamins Plus—This product, put out by Vitamins Plus, Inc., New York, was advertised under a number of misrepresentations. Among these were that cloudy or lusterless eyes or lack of whiteness of the teeth are generally due to vitamin A deficiency, that vitamins are of significance in determining the duration of the time hair stays in curl, or makeup remains on the surface of the skin or nail polish adheres to the nails, that vitamin B will maintain or nourish brain tissue or will remove lactic acid from the blood stream and thereby eliminate fatigue, or is of value in cases of constipation or nervous disorders, except when and to the extent that such cases may be due to insufficient vitamin B, that foods customarily consumed have but a negligible amount of vitamin B, that vitamin E is known to be capable of preventing sterility or of promoting mental or physical vigor, that by use of "Vitamins Plus" a person may expect to have sparkling eyes, or gleaming or lustrous hair or a lovely complexion, or that one may become active, gay, beautiful or charming, or live without a "let up" or "let down." In October 1940 Vitamins Plus, Inc., signed a stipulation with the Federal Trade Commission agreeing to discontinue the foregoing misrepresentations. Some editorial comment on this case appeared in THE JOURNAL Nov. 9, 1940, page 1639, under the title "Nonplusing 'Vitamins Plus'."

Zonite Products—Three of these, "Zonite Ointment," "Zonite Liquid" and "Vaginal Suppositories (Zonitors)" were named in a stipulation entered into by the Zonite Products Corporation, New York, and the Federal Trade Commission in March 1940. In this the concern promised to discontinue certain misrepresentations. Among these were that the use of menstrual distress is often due to the presence of germs or that the problem of feminine hygiene is eliminated by the use of the company's products or that they are a competent treatment for leukorrhea, that "Zonite Liquid" has a soothing action on the membranes of the vagina, that it can never injure delicate tissues, that its use assures freedom from grip, colds and other diseases of the respiratory system, that it is effective in curing the cause of pyorrhea, will control all dandruff or itchy scalp, that the company's products are the only antiseptics which are non-irritating to the skin, that either "Zonite Liquid" or "Zonite Ointment" is 100 per cent effective in preventing athlete's foot, that it assures the user of immunity therefrom. Some years ago a chemist reported that the liquid Zonite consisted essentially of a solution of sodium hyposulfite yielding approximately 1 per cent of chlorine.

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE
CHICAGO, Feb. 16-17, 1942 Council on Medical Education and Hospitals, Sec. Dr. William D. Cutter, 535 North Dearborn Street, Chicago.

NATIONAL BOARD OF MEDICAL EXAMINERS EXAMINING BOARDS IN SPECIALTIES

Examinations of the National Board of Medical Examiners and Examining Boards in Specialties were published in THE JOURNAL, September 20, page 1037.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: Montgomery, June 16-18 Sec. Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ARIZONA: Phoenix, Oct. 7-8 Sec. Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

ARKANSAS: Medical Little Rock, Nov. 6-7. Sec. Dr. D. L. Owens, Harrison Electric Little Rock, Nov. 6 Sec. Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: Oral examination (required when reciprocity application is based on a state certificate or license issued ten or more years before filing application in California), San Francisco, Oct. 1. Written. Sacramento, Oct. 20-23. Sec. Dr. Charles B. Pinkham, 1020 N. St., Sacramento.

COLORADO: Examination Denver, Oct. 7. Endorsement. Denver, Oct. 8-10. Sec. Dr. George R. Buck, 831 Republic Bldg., Denver.

CONNECTICUT: Medical Examination Hartford, Nov. 11-12 Endorsement Hartford, Nov. 25 Sec. Dr. Creighton Barker, 258 Church St., New Haven Homoeopathic. Derby, Nov. 11-12 Sec. Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DELAWARE: Dover, July 14-16 Sec. Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: Washington, Nov. 10-11. Sec. Dr. George C. Ruhland, 6150 East Municipal Bldg., Washington.

FLORIDA: Jacksonville, Nov. 24-25. Sec. Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, Oct. 14-15. Sec. State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

HAWAII: Honolulu, Jan. 12-15 Sec. Dr. James A. Morgan, 48 Young Bldg., Honolulu.

IDaho: Boise, Oct. 7. Dir., Bureau of Occupational License, Mr. Walter Curtis, 355 State Capitol Bldg., Boise.

ILLINOIS: Chicago, Oct. 14-16 Supt. of Registration, Mr. Lucien A. Fife, Department of Registration and Education, Springfield.

INDIANA: Indianapolis, June 16-18. Sec. Board of Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

KANSAS: Topeka, Dec. 9-10. Sec. Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

KENTUCKY: Louisville, Dec. 8-10. Sec. Dr. A. T. McCormack, 620 S. Third St., Louisville.

MAINE: Portland, Nov. 12-13. Sec. Board of Registration of Medicine, Dr. Adam P. Leighton, 129 State St., Portland.

MARYLAND: Medical Baltimore, Dec. 9-12. Sec. Dr. John T. O'Mara, 1215 Cathedral St., Baltimore Homoeopathic. Baltimore, Dec. 9-10. Sec. Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, Nov. 4-7 Sec. Board of Registration in Medicine, Dr. Stephen Rushmore, 413-F State House, Boston.

MICHIGAN: Lansing, Oct. 15-17. Sec. Board of Registration in Medicine, Dr. J. Earl McIntyre, 203 Hollister Bldg., Lansing.

MINNESOTA: Minneapolis, Oct. 21-23. Sec. Dr. J. F. Du Bois, 230 Lowry Medical Arts Bldg., St. Paul.

MISSISSIPPI: Reciprocity Jackson, December. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MISSOURI: Kansas City, Oct. 29-31 Sec. State Board of Health, Dr. James Stewart, State Capitol Bldg., Jefferson City.

MONTANA: Helena, Oct. 6-8 Sec. Dr. Otto G. Klein, First National Bank Bldg., Helena.

NEVADA: Reciprocity with oral examination, Nov. 3. Final date for filing application is Oct. 20. Sec. Dr. Fred M. Anderson, 315 N. Carson St., Carson City.

NEW JERSEY: Trenton, Oct. 21-22. Sec. Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 13-14 Sec. Dr. Le Grand Ward, 135 Sena Plaza, Santa Fe.

NORTH CAROLINA: Endorsement. December. Sec. Dr. W. D. James, Hamlet.

NORTH DAKOTA: Grand Forks, Jan. 6-9. Sec. Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OKLAHOMA: Reciprocity Oklahoma City, Dec. 10 Sec. Dr. James D. Osborn, Jr., Frederick.

OREGON: Reciprocity Portland, Oct. 18 Examination Portland, January Exec. Sec. Miss Lorianne M. Conlee, 608 Failing Bldg., Portland.

PENNSYLVANIA: Philadelphia, January. Acting Sec., Bureau of Professional Licensing, Mrs. Marguerite G. Steiner, 358 Education Bldg., Harrisburg.

RHODE ISLAND: Providence, Oct. 2-3 Sec. Division of Examiners, Dr. Robert M. Lord, 366 State Office Bldg., Providence.

SOUTH CAROLINA: Columbia, Nov. 10-11. Sec. Dr. A. Earle Booser, 505 Saluda Ave., Columbia.

SOUTH DAKOTA: Pierre, Jan. 13-14. Dir., Medical Licensure, Dr. J. F. D. Cook, State Board of Health, Pierre.

TENNESSEE: Memphis, Oct. 1-2 Sec. Dr. H. W. Qualls, 130 Madison Ave., Memphis.

TEXAS: Austin, Nov. 17-19 Sec. Dr. T. J. Crowe, 918 Texas Bank Bldg., Dallas.

VERMONT: Burlington, Feb. 10-12. Sec. Board of Medical Registration, Dr. F. J. Lawless, Richmond.

VIRGINIA: Richmond, Dec. 9-12 Sec. Dr. J. W. Preston, 30½ Franklin Road, Roanoke.

WEST VIRGINIA: Charleston, Nov. 17-19 Sec., Public Health Council, Dr. C. F. McClintic, State Capitol, Charleston.

WISCONSIN: Madison, Jan. 13-15 Sec. Dr. H. W. Shutter, 425 E. Wisconsin Ave., Milwaukee.

WYOMING: Cheyenne, Oct. 6-7. Sec. Dr. M. C. Keith, State Capitol Bldg., Cheyenne.

* Basic Science Certificate required

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

CONNECTICUT: Oct. 11. Address State Board of Healing Arts, 1945 Yale Station, New Haven.

DISTRICT OF COLUMBIA: Sec. Dr. George C. Ruhland, 6150 East Municipal.

FLORIDA: DeLand, Nov. application is Oct.

17 Sec., Professor J. F. Conn, John B. Stetson University, DeLand.

IOWA: Des Moines, Oct. 14 Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

MINNESOTA: Minneapolis, Oct. 7-8 Sec. Dr. J. C. McKinley, 126 Millard Hall, University of Minnesota, Minneapolis.

NEBRASKA: Lincoln, Oct. 7-8 Dir., Bureau of Examining Boards, Mrs. Jeannette Crawford, 1009 State Capitol Bldg., Lincoln.

OREGON: Portland, Nov. 1. Final date for filing application is Oct. 15. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

RHODE ISLAND: Providence, Nov. 19 Chief, Division of Examiners, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH DAKOTA: Aberdeen, Dec. 5-6 Sec. Dr. G. M. Evans, Yankton.

Illinois April Report

The Illinois Department of Registration and Education reports the written examination for medical licensure (graduates of foreign schools given also a practical test) held in Chicago, April 1-3, 1941. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Fifty-nine candidates were examined, 51 of whom passed and 8 failed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
College of Medical Evangelists	(1939)	77
Chicago Medical School	(1940) 76, (1941)	80
Northwestern University Medical School	(1939)	87,*
(1940) 82,* 82, 84, (1941) 76, 81, 82,* 83, 84,* 87*			
Rush Medical College	(1939) 75, 79,* 82, 84, (1940)	80,
81, 83,* 83, 84, 84, 84			
University of Illinois College of Medicine	(1940)	76,
81,* 81,* 81, 82, 83, 86, (1941) 85†			
University of Michigan Medical School	(1938)	84*
Cornell University Medical College	(1924)	80
Duke University School of Medicine	(1935)	84*
University of Pennsylvania School of Medicine	(1939)	83*
University of Wisconsin Medical School	(1939)	82
University of Toronto Faculty of Medicine	(1931)	86
University of Western Ontario Medical School	(1938)	90*
Medizinische Fakultät der Universität Wien	(1920)	76,
(1936) 75, 82, (1937) 75			
Friedrich Wilhelms Universität Medizinische Fakultät, Berlin	(1921)	78
Johann Wolfgang Goethe Universität Medizinische Fakultät, Frankfurt am Main	(1921)	79
Julius Maximilians Universität Medizinische Fakultät, Würzburg	(1909), 76, (1915)	75
Regia Università di Napoli Facoltà di Medicina e Chirurgia	(1937)	78
Regia Università di Torino Facoltà di Medicina e Chirurgia	(1923)	81
Universiteit van Amsterdam Geneeskunde Faculteit	(1934)	76
Universität Bern Medizinische Fakultät	(1936)	77

School	FAILED	Year Grad	Number Failed
Medizinische Fakultät der Universität Wien	(1921), (1922), (1924)	3
Albert Ludwigs Universität Medizinische Fakultät, Freiburg	(1922)	1
Friedrich Wilhelms Universität Medizinische Fakultät, Berlin	(1917)	1
Julius Maximilians Universität Medizinische Fakultät, Würzburg	(1923)	1
Schlesische Friedrich-Wilhelms Universität Medizinische Fakultät, Breslau	(1922)	1
National University of Athens School of Medicine	(1938)	1

Twenty-four physicians were successful in the practical test for reciprocity and endorsement applicants held in Chicago, April 3. The following schools were represented:

School	PASSED	Year Grad	Reciprocity with
Loyola University School of Medicine	(1918)	Penn.
Northwestern University Medical School	(1939)*	Wisconsin
Rush Medical College	(1935)*	(1937)* Minnesota
(1935)* Michigan			
Indiana University School of Medicine	(1932), (1938)*	Indiana
Tulane University of Louisiana School of Medicine	(1928)	Louisiana
University of Michigan Medical School	(1936)	Michigan
University of Minnesota Medical School	(1926)*	(1933) Minnesota
St. Louis University School of Medicine	(1928)*	Missouri
Washington University School of Medicine	(1929), (1939)*	Missouri
University of Nebraska College of Medicine	(1930)*	Nebraska

University of Pennsylvania School of Medicine.....	(1924)	Penna.
University of Pittsburgh School of Medicine.....	(1926)	Penna.
Vanderbilt University School of Medicine.....	(1919)*	Tennessee
University of Texas School of Medicine.....	(1931)	Texas
Marquette University School of Medicine.....	(1935)	Wisconsin
University of Wisconsin Medical School.....	(1931)*	Wisconsin

School	PASSED	Year Endorsement Grad. of
Yale University School of Medicine.....	(1938)	N. B. M. Ex.
Harvard Medical School.....	(1935)	N. B. M. Ex.
Washington University School of Medicine.....	(1928)	N. B. M. Ex.

* Licenses have not been issued.

† This applicant has completed four years' medical work and will receive the M.D. degree on completion of internship. License has not been issued.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Intoxication: Compelling Defendant to Give Specimen of Urine as Violative of Constitutional Provision Against Compulsory Self Incrimination.—The defendant killed a person, it was charged, in operating an automobile while intoxicated. He was arrested and shortly thereafter was compelled by police officers to submit to a series of tests to determine whether or not he was intoxicated. A specimen of his urine was taken for chemical examination. He was indicted for murder and at the subsequent trial the court permitted a chemist to testify that an analysis of the sample of the urine disclosed the presence of alcohol. A police officer was also permitted to testify that the other tests performed on the defendant indicated, in his opinion, that the defendant was intoxicated. The defendant was convicted and appealed to the court of criminal appeals of Texas.

The defendant contended that a constitutional right guaranteed by the Texas constitution—that no one accused of crime should be compelled to give evidence against himself—had been violated by the admission of the testimony of the chemist and the police officer. The rights intended to be protected by the constitutional provision referred to, said the court, are so sacred, and the pressure toward their relaxation so great when suspicion of guilt is strong and evidence is obscure, that it is the duty of courts liberally to construe the prohibitions in favor of personal rights and to refuse to permit any step tending toward their invasion. Such constitutional inhibitions are directed not merely to the giving of oral testimony but embrace as well the furnishing of evidence by other means than by word of mouth; the divulging, in short, of any fact that the accused has a right to hold secret. The evidence shows that the defendant was compelled by the police officers to submit to the tests desired by them and that he had therefore been compelled to give evidence against himself. The judgment of conviction was accordingly reversed and the cause remanded.—*Apodaca v. State*, 146 S. W. (2d) 381 (Texas, 1941).

Libel and Slander: False Charge that Physician Is Not Licensed Slanderous.—In connection with a claim of Mrs. Perkins for benefits under a policy of insurance, the plaintiff physician executed a certificate supplied by the insurance company. The insurance company rejected the claim, and one of its agents in explaining orally to the insured the reason for its action stated that it did so because the plaintiff physician was not licensed to practice medicine and surgery in that state. The physician, contending that he was licensed to practice medicine and surgery and that the statement by the agent to the contrary injured him, instituted an action for slander against the insurance company. From a judgment for the physician, the insurance company appealed to the Kansas City court of appeals, Missouri.

The plaintiff's complaint alleged that the untrue and defamatory statement had injured him both individually and as a physician. At the trial, however, he abandoned that charge of the complaint which alleged injury to him as a physician and the case was submitted to the jury only on the question of injury to the plaintiff's personal reputation and good name. The

defendant contended that the defamatory statement was actionable from the mere fact of its utterance and without proof of special damage only as to injury to the physician in the practice of his profession and was not actionable with respect to the physician as a private individual unless there was a showing of special damages. Since the physician, the defendant argued, had abandoned the claim of slander as to his profession and since there was no proof that the allegedly slanderous statement had caused him any special damages in his capacity as a private individual, the judgment for the physician was unwarranted. The defendant cited in support of its contention *Boyer v. Wheeler*, 197 Mo. App. 295, 195 S. W. 84, which held that, with the exception of defamatory words touching one's fitness for or integrity in office, or which prejudice one in his trade, profession or business, oral words are not actionable without proof of special damage, unless they impute the commission of an indictable offense punishable by corporal punishment. But, said the appellate court, it is a misdemeanor, punishable by either or both corporal punishment and fine, in Missouri for one to act as a physician and surgeon or to hold himself out as authorized so to practice unless he possess a license so to do. The statement by the insurance agent that the plaintiff was not licensed to practice charged, in effect, that the plaintiff in executing the certificate in the capacity of a physician and surgeon had committed an indictable offense punishable by corporal punishment. If not true, the statement as to the plaintiff as an individual was therefore slanderous per se and actionable without proof of special damages. The evidence is clear that the statement was not true and that the plaintiff is licensed to practice. The judgment for the plaintiff was accordingly affirmed.—*Tincher v. National Life & Accident Ins. Co.*, 146 S. W. (2d) 663 (Mo., 1941).

Society Proceedings

COMING MEETINGS

- American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 19-23. Dr. William P. Wherry, 107 South 17th St., Omaha, Executive Secretary.
- American Academy of Pediatrics, Boston, Oct. 8-11. Dr. Clifford G. Grulice, 636 Church St., Evanston, Ill., Secretary.
- American Clinical and Climatological Association, Skytop, Pa., Oct. 16-18. Dr. Francis M. Rackemann, 263 Beacon St., Boston, Secretary.
- American College of Surgeons, Boston, Nov. 3-7. Dr. Frederic A. Besley, 40 East Erie St., Chicago, Secretary.
- American Public Health Association, Atlantic City, N. J., Oct. 14-17. Dr. Reginald M. Atwater, 50 West 50th St., New York, Executive Secretary.
- American Society of Tropical Medicine, St. Louis, Nov. 11-14. Dr. E. Harold Hinman, Wilson Dam, Ala., Secretary.
- Associated Anesthetists of the United States and Canada, Boston, Nov. 3-7. Dr. C. J. Wells, 1932 S. Salina St., Syracuse, N. Y., Secretary.
- Association of Military Surgeons of the United States, Louisville, Ky., Oct. 29-Nov. 1. Colonel James M. Phalen, Army Medical Museum, Washington, D. C., Secretary.
- Central Association of Obstetricians and Gynecologists, New Orleans, Oct. 2-4. Dr. William F. Mengert, 515 Newton Road, Iowa City, Secretary.
- Clinical Orthopaedic Society, Cleveland and Akron, Ohio, Oct. 3-4. Dr. Myron O. Henry, 825 Nicollet Ave., Minneapolis, Secretary.
- Delaware Medical Society of Wilmington, Oct. 7-8. Dr. C. L. Munson, 1015 Washington St., Wilmington, Secretary.
- District of Columbia Medical Society of the Washington, Sept. 30-Oct. 2. Mr. Theodore Wiprud, 1718 M Street N.W., Washington, Secretary.
- Inter-State Postgraduate Medical Association of North America, Minneapolis, Oct. 13-17. Dr. Tom B. Throckmorton, 406 Sixth Ave., Des Moines, Iowa, Secretary.
- Kentucky State Medical Association, Louisville, Sept. 29-Oct. 3. Dr. Arthur T. McCormack, 620 South Third St., Louisville, Secretary.
- Mississippi Valley Medical Society, Cedar Rapids, Iowa, Oct. 1-3. Dr. Harold Swenberg, 510 Maine St., Quincy, Ill., Secretary.
- Omaha Mid-West Clinical Society, Omaha, Oct. 27-31. Dr. J. D. McCarthy, 1036 Medical Arts Bldg., Omaha, Secretary.
- Pennsylvania Medical Society of the State of, Pittsburgh, Oct. 6-9. Dr. Walter F. Donaldson, 500 Penn Ave., Pittsburgh, Secretary.
- Southern Medical Association, St. Louis, Nov. 10-13. Mr. C. P. Leary, Empire Bldg., Birmingham, Ala., Secretary.
- Southern Minnesota Medical Association, Mankato, Sept. 29. Dr. W. Barker, 102 Second Ave., Rochester, Secretary.
- Vermont State Medical Society, Burlington, Oct. 2-3. Dr. Benjamin F. Cook, 154 Bellevue Ave., Rutland, Secretary.
- Virginia Medical Society of, Virginia Beach, Oct. 6-8. Mrs. A. V. Edwards, 1200 East Clay St., Richmond, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1931 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Digestive Diseases, Huntington, Ind.

8:237-278 (July) 1941

- Incidence and Diagnosis of Pancreatic Lithiasis. Review of Eighteen Cases. A M Snell and M W Comfort, Rochester, Minn.—p 237
- Nutritional Problems as Related to National Defense. R M Wilder, Rochester, Minn.—p 243
- Incidence of Regional Ileitis. C W Wirts Jr and B B V Lyon, Philadelphia—p 246
- Studies on Ascorbic Acid Deficiency in Gastric Diseases. Incidence, Diagnosis and Treatment. J B Ludden, J Flewner and I S Wright, New York—p 249
- Uncommon Clinical Pictures in Suppurative Perianal Infections. M Diamond and H Laufman, Chicago—p 252
- Bacteriologic Examination of Stomach Contents in Pernicious Anemia. G F Dick, Chicago—p 255
- Perforation of Stomach with Flexible Gastroscope. Case Report. L Schiff and N Shapiro, Cincinnati—p 260
- Relation of Nutrition to Gastric Function. II. Effect of Vitamin C Deficiency. J H Roe, J M Hall and Helen M Dyer, Washington, D C—p 261
- Production of Intestinal Lesions by Feeding Karyn Gunt and Other Materials to Rats. F Hoelzel, Esther Da Costa and A J Carlson, Chicago—p 266
- Depression of Gastric Motility by Insulin. H Necheles, W H Olson and R Morris, Chicago—p 270

American J. Obstetrics and Gynecology, St. Louis

42:1-192 (July) 1941 Partial Index

- Studies on Nucleated Red Cell Count in Chorionic Capillaries and Cord Blood of Various Ages of Pregnancy. G W Anderson, Buffalo—p 1
- Intrauterine Respiration in Relation to Development of Fetal Lung with Report of Two Unusual Anomalies of Respiratory System. Edith L Potter and G P Bohlender, Chicago—p 14
- Supravaginal and Total Hysterectomy. R L Pearce, Durham, N C—p 22
- Study of 150 Consecutive Cases of Ectopic Pregnancy. H H Ware Jr and W C Winn, Richmond, Va—p 33
- Placenta Bilobata. R Torpin, Augusta, Ga, and B F Hart, Winter Park, Fla—p 38
- Oral Progesterin (Anhydrous progesterone) in Treatment of Dysmenorrhea. R B Greenblatt, E McCall and R Torpin, Augusta, Ga—p 50
- Sterilization in Puerperium. W N Thornton Jr and T J Williams, University, Va—p 54
- Electrometric Study of Uterine Activity. Preliminary Report. L Laugman, New York, and H S Burr, New Haven, Conn—p 59
- Bacteriologic Characteristics of Anaerobic Streptococci Recovered from Postpartum Patients with Special Reference to Initiation of Infection by These Organisms. M L Stone, New York—p 68
- Ruptured Uterus. H F Burkons, Cleveland—p 75
- Treatment of Menstrual Disorders with Pregnant Mare's Serum. W H Vogt Jr and D L Sexton, St. Louis—p 81
- Effect of Oral Administration of Alpha Estradiol and Pregnenolone on Human Estrate Uterus. T Neustaedter, New York—p 86
- Estrin Potency and Basal Metabolism. Mary E Collett, Ruth W Reed, Isabelle Isaac, Sylvia Rouse and Eleanor Yeakel, Cleveland—p 93
- *Incidence of Hypertension After Toxemias of Pregnancy. T J Williams, University, Va, H G Nix, Tampa, Fla, and C H Mauzy, Winston-Salem, N C—p 98

Hypertension After Toxemias of Pregnancy.—Williams and his collaborators, investigating the connection between toxemia of pregnancy and hypertension, were able to follow up 224 cases in which toxemia had occurred from one to thirteen years previously. Using a systolic-diastolic standard of 140/90 mm of mercury for determining blood pressure, they found that definite hypertension existed in 104 (46.5 per cent). The age and parity of the patient at the time of the toxemia seemed to be the most significant factors in the incidence of subsequent hypertension. Approximately 80 per cent of those more than 35 years of age had hypertension. Primiparas had

a 26 per cent incidence as compared with a 66 per cent incidence in multiparous patients. Later hypertension was twice as great in patients who had had toxemia and gave birth subsequently as in those who did not repeat the pregnancy. Except in cases of previously known chronic nephritis or essential hypertension, the severity and type of toxemia seemed to have no special significance. The elevation of the systolic and diastolic pressures at the time of the toxemia likewise seemed to play only a small part in the incidence of later hypertension, except at very high levels. Except in cases of previously known nephritis and hypertension no definite criteria exist for predicting the possibility of permanent hypertension following the toxemia. If hypertension persists in patients who have had toxemia, additional pregnancies should be undertaken with considerable reluctance and with a very careful antepartum regimen. About half of the patients will have no persisting hypertension and may go through subsequent pregnancies without ill effects or permanent damage.

American Journal of Physiology, Baltimore

133:503-804 (July) 1941 Partial Index

- Relative Effects of Desoxycorticosterone and Whole Corticoadrenal Extract on Adrenal Insufficiency. S W Britton and R F Kline, Charlottesville, Va—p 503
- Antagonistic Action of Desoxycorticosterone and Postpituitary Extract on Chloride and Water Balance. E L Corey and S W Britton, with technical assistance of R F Kline and C R French, Charlottesville, Va—p 511
- Influence of Gelatin Ingestion on Creatinine Excretion of Normal Men. D B Dill and S M Horvath, with technical assistance of F Consolazio, Boston—p 520
- Environmental Temperatures and Thiamine Requirements. C A Mills, Cincinnati—p 525
- Effect of Emotion, Sham Rage and Hypothalamic Stimulation on Vago-Insulin System. E Gellhorn, R Cortell and J Feldman, Chicago—p 532
- Composition of Gastric Juice as Function of Rate of Secretion. J S Gray and G R Bucher, Chicago—p 542
- Resistance of Central Synaptic Conduction to Asphyxiation. A Van Hurreveld, Pasadena, Calif—p 572
- Age Changes and Sex Differences in Alveolar Carbon Dioxide Tension. N W Shock, Berkeley, Calif—p 610
- Ineffectiveness of Vagal Stimulation on Ventricular Fibrillation in Dogs. C J Wiggers, Cleveland—p 634

Annals of Internal Medicine, Lancaster, Pa.

15:1-164 (July) 1941

- Special Medical Service in Defense Program. C S Stephenson, Washington, D C—p 1
- The Recruit's First Year. P S Madigan, Washington, D C—p 18
- *Silent or Atypical Coronary Occlusion. W D Stroud and J A Wagner, Philadelphia—p 25
- *Effect of Thiamine on Residual Neural Disturbances of Treated Pernicious Anemia. J C Zillhardt, Binghamton, N Y, K MacLean, Vancouver, B C, and W P Murphy, Boston—p 33
- Effect of Vitamin B Complex on Residual Neural Disturbances of Treated Pernicious Anemia. J C Zillhardt, Binghamton, N Y, Israel Howard and W P Murphy, Boston—p 44
- *Syndrome of Multiple Vitamin Deficiency. V P Sydenstricker, Augusta, Ga—p 45
- Glucose Sulfapyridine. Experimental and Clinical Studies. H K Ensorworth, J Liebmann, M C Lockhart and N Plummer, New York—p 52
- *Syndrome of Upper Esophageal Stenosis. M R Canuel and L Locwe, Brooklyn—p 63
- Development of Plasma Preparations for Transfusions. M M Strumler and J J McGraw, Philadelphia—p 80
- Toxic Depression of Myeloid Elements Following Therapy with Sulfonamides. Report of Eight Cases. S S Rinkoff and M Spring, Bronx, N Y—p 89
- Responsibility of Hospital Staff in Graduate Medical Education. F J Sladen, Detroit—p 108

Silent or Atypical Coronary Occlusion.—Stroud and Wagner discuss painless coronary occlusion and myocardial infarction on the basis of 49 cases of proved myocardial infarction in which 13 were without pain. The authors point out the difficulty of explaining painless infarction. Swallowing, choking, gagging or dyspnea may be pain equivalents. Therapeutically it is of prime importance to be cognizant of the possibility of absence of pain in the presence of coronary pathologic changes. Vague symptoms of weakness in patients with hypertension or the onset of increased dyspnea, together with progressive failure in patients with previous mild failure, should make one alert to this serious condition. Rest in bed and serial electrocardiographic check-ups are highly desirable.

Patients with the typical pain of coronary insufficiency but with no other suggestive clinical findings, even in the absence of changing T waves in the electrocardiograms, must be considered as possible cases of coronary occlusion without myocardial infarction and be treated accordingly; namely, with total rest in bed for a week or ten days. Clinical judgment is of much greater importance in these cases than the electrocardiograms.

Effect of Vitamin B₁ on Residual Neural Disturbances.—Zillhardt and his associates, on the basis of 19 cases about equally divided as to sex, report the temporary beneficial effects of vitamin B₁ on residual neural signs and symptoms of pernicious anemia which seemed stationary in spite of persistent and intensive anti-pernicious anemia therapy. The principal improvements noted in physical examinations were in temperature sense, pain sense and in two point discrimination and occurred only during the first two months of an experimental period of four months. Three thousand international units of vitamin B₁ intravenously was found to be more effective than 900 international units given orally twice a day. The many variables involved in attempting to quantitate neurologic symptoms and signs were carefully considered by the authors. Since the intramuscular use of vitamin B₁ seemed to benefit most of the patients, they believe that with such treatment the efficiency of undamaged neural tissue might become increased or existing reversible peripheral neuritic changes become improved or, as a result of the possible improvement of the patient's general health, neural function might become enhanced.

Syndrome of Multiple Vitamin Deficiency.—According to Sydenstricker, clinical observations and therapeutic tests furnish presumptive proof that the presence of signs of any one avitaminosis is indicative of multiple vitamin deficiency. In the B group, treatment with the single vitamin, indicated by predominant signs, may result in the rapid development of severe manifestations of other deficiencies. In the majority of cases, signs of multiple deficiency can be found without difficulty. A high protein, high caloric diet, containing adequate amounts of the protective foods, is the basis of all treatment of deficiency disease. The components of such a diet, the manner and the frequency of ingestion can be adapted to the needs of the individual case. In addition to relatively great amounts of the particular vitamin which is lacking, all other available vitamins should be given in amounts representing at least four or five times the normal daily requirements. Vitamins B₁ and B₂ frequently produce almost immediate effects when given intramuscularly or intravenously after failure on peroral administration. It may be wise to give these vitamins by injection to patients who are urgently ill.

Upper Esophageal Stenosis.—Camiel and Loewe point out that esophageal neoplasms of the upper third portion of the esophagus are characterized by paralysis of one or both vocal cords, by dysphagia, by aspiration of ingesta into the tracheo-bronchial tree, by pulmonary complications due to aspiration and by frequent occurrence of clubbed fingers (more than one third in this series presented clubbed fingers). Twelve of the 13 patients showing involvement of the uppermost third of the esophagus died of aspiration bronchopneumonia. Their average age was more than 58 years. The incidence of pulmonary complications fell perceptibly when the esophageal lesions lay distal to its uppermost third. The esophageal lesions were mainly neoplastic, though neoplasia does not appear to be an absolute prerequisite for this syndrome. Neither need the recurrent laryngeal nerves be involved. Neoplastic stenosis in the upper esophagus, however, creates an anatomic and physiologic pathologic change which makes aspiration almost inevitable. Diagnosis of pulmonary lesions, paralysis of the vocal cords or clubbed fingers, in the absence of a known primary, should point strongly to the esophagus or its neighboring structures as the offender. Strangulation following attempts at swallowing may be pathognomonic not only of esophagotracheal or bronchial fistula but of the syndrome under discussion. Fluoroscopic barium sulfate study of the act of swallowing should be routinely employed in the examination of esophageal lesions.

Archives of Dermatology and Syphilology, Chicago 44:147-320 (Aug.) 1941

- Tularemia. T. K. Lawless, Chicago.—p. 147.
Histology of Neurodermatitis. R. C. MacCardle, M. F. Engman Jr. and M. F. Engman Sr., St. Louis.—p. 161.
Skin Reactions: XII. Patterns Produced in Skin by Electrophoresis of Dyes. H. A. Abramson and Margery G. Engel, New York.—p. 190.
Ordinary Baldness. H. Rattner, Chicago.—p. 201.
Squamous Cell Epithelioma Associated with Senile Keratosis on Leg of Negro: Report of Case. G. A. Spencer, New York.—p. 214.
Contact Dermatitis Due to Underwear: Observations in Fourteen Cases, with Summary of Efforts to Discover Cause. A. W. Neilson and A. J. Reiches, St. Louis.—p. 218.
Topical Treatment with Sulfathiazole. W. M. Sams and I. Capland, Miami, Fla.—p. 226.
Cornu Cutaneum. D. W. Montgomery, San Francisco.—p. 231.
Sulfanilamide and Allied Compounds: Their Value and Limitations in Dermatology. F. C. Combes and O. Canizares, New York.—p. 236.
Androgen and Xanthomatosis. T. Cornbleet and Broda Barnes, Chicago.—p. 248.
Gastroscopic Observations in Rosacea. B. Usher, Montreal, Canada.—p. 251.

Archives of Pathology, Chicago 32:169-314 (Aug.) 1941

- *Adenomatous Hyperplasia of Adrenal Cortex Associated with Essential Hypertension. J. F. Rinehart, San Francisco; O. O. Williams, Phoenix, Ariz., and W. S. Cappeller, San Francisco.—p. 169.
Incidence and Localization of Coronary Artery Occlusions. M. J. Schlesinger and P. M. Zoll, Boston.—p. 178.
Distribution of Acid Phosphatase in Tissues Under Normal and Under Pathologic Conditions. G. Gomori, Chicago.—p. 189.
Osteitis Fibrosa Localisata: Experimental Study. J. L. Bremer, Boston.—p. 200.
Effect of Cellophane Perinephritis on Granular Cells of Juxtaglomerular Apparatus. F. W. Dunihue, Burlington, Vt.—p. 211.
Teratomas of Neck in Newborn: Report of Case with Autopsy. F. D. Chapman, Boston.—p. 217.
Psammomatous Dural Endothelioma (Meningioma) with Pulmonary Metastasis. H. N. Jurrow, Cincinnati.—p. 222.
Hemolytic Reactions Following Transfusions of Blood of Homologous Group: II. Further Observations on Role of Property Rh, Particularly in Cases Without Demonstrable Isoantibodies. A. S. Wiener, Brooklyn.—p. 227.
Anomalies of Circle of Willis in Relation to Cerebral Softening. G. H. Fetterman, Pittsburgh, and T. J. Moran, Mayview, Pa.—p. 251.
Histologic Demonstration of Vitamin A in Tumors. H. Popper and A. B. Ragins, Chicago.—p. 258.
Constitution and Related Factors in Resistance to Tuberculosis. E. R. Long, Philadelphia.—p. 286.

Hyperplasia and Essential Hypertension.—Rinehart and his associates made an anatomic study of the adrenal glands removed at necropsy from 26 patients with hypertension, 18 with heart and valvular or pulmonary disease, 4 with glomerular nephritis and 9 with chronic pyelonephritis. The alterations found were compared with those in the adrenal glands of 100 nonhypertensive patients. They found that nodular or adenomatous hyperplasia of the adrenal cortex was usually associated with essential hypertension. The cells were hyperplastic and many showed a high lipid content. Similar changes were infrequent in the adrenal glands of nonhypertensive patients. The mean weights of the adrenal glands of the 100, 18, 4, 9 and 26 patients were 11.2, 10.6, 13.1, 13.3 and 15.4 Gm. respectively. The adrenal glands of the 18 patients with cardiac hypertrophy due to valvular or pulmonary disease did not differ in size or microscopic appearance from the control group. In 1 of the 4 with glomerular nephritis there was mild adenomatous hyperplasia of the cortex and increased lipid, and in the other 3 the adrenal glands appeared essentially normal. In the adrenal glands of 2 of the 9 patients with chronic pyelonephritis there was well defined adenomatous hyperplasia of the cortex comparable to that seen in essential hypertension, and in 6 there was a mild hyperplasia or slight cortical thickening. This suggests that there is some stimulation of the adrenal cortex in renal hypertension. The authors suggest that hypersecretion of the adrenal cortex may in some cases be a factor in the genesis of essential hypertension. While the hyperplasia of the adrenal cortex occurring commonly in essential hypertension may also be a secondary effect, it is possible that "primary" hyperplasia and hypersecretion of the adrenal cortex might induce hypertension. The hyperplasia of the adrenal cortex in essential hypertension is almost as definite as that of the thyroid in exophthalmic goiter.

California and Western Medicine, San Francisco

55:1-54 (July) 1941

- Peyronie's Disease or Fibrous Cavernositis Some Observations E W Bench Sacramento—p 7
Skin Reactions Produced by 200 Kilovolt and 1 000 Kilovolt Radiations Comparison R S Stone and J M Robinson, San Francisco—p 11
Use of "Blood Bank" in Transfusions N Evans, Los Angeles—p 14
Relief of Pain About Head and Neck H A Brown San Francisco—p 17
Appendicitis Report of Case F R Guido Visalia—p 19
Operative Supportive Treatment of Varicose Ulcers R S Sherman and M I Montgomery San Francisco—p 22
Role of Caudal Epidural Injections in Production of Constipation and Urinary Retention W C Boeck Los Angeles—p 24
Choice in Sulfonamide Drugs L A Rantz and W C Cutting San Francisco—p 29
Public Health Activities and Responsibilities E Belt Los Angeles—p 30
Role of the Doctor of Medicine in the Life and Health of the American Citizen Ruth Kliever Bakersfield—p 32

Delaware State Medical Journal, Wilmington

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- Development of the Delaware State Hospital M A Tarumanz Farmhurst—p 85
Male Migraine Treated with Female Sex Hormone C W Dunn, Philadelphia—p 89
Electric Shock Therapy P F Elfeld Farmhurst—p 95
Chronic Myelogenous Leukemia J W Billard Farmhurst—p 97
Establishing Real Identity of Patient Following Metrazol Shock F Paul Farmhurst—p 98
Psychotherapy Case Presentation from Mental Hygiene Clinic to Illustrate Treatment Methods M I Wadsworth Farmhurst—p 100
Loss of Personal Identity (Amnesia) and Its Role in Organic Syndromes G J Gordon and B G Lawrence Farmhurst—p 106
Anorexia Nervosa M Zimble Farmhurst—p 112
Myasthenia Gravis Case Report E Kelemen Farmhurst—p 117
Vitamin E G Bieringer Farmhurst—p 119
Meaning of Functional Disorders T A Frehan Farmhurst—p 122
Treatment of Perforation of Hard Plate in the Edentulous Mouth W H Norris J A Wiener and I C Harris Farmhurst—p 125

Journal of Aviation Medicine, St. Paul

12:113-180 (June) 1941

- Effects of Reduced Atmospheric Pressures on Electroencephalogram R S Lyman, W A Carlson and O O Benson Jr, Dayton Ohio—p 115
Necessity of Emergency Oxygen Unit for Use in Parachute Escapes at High Altitudes W M Boothby W R Lovelace and H B Burchell Rochester, Minn—p 126
Effect of Anoxia on Heart—Influence of Exercise and Effect of Acute Anoxia at Rest E J Van Niere Morristown N J—p 131
Improved Technique for Applying Electrode Jelly R Greene Coral Gables Fla—p 135
Development of Substratosphere Flying D W Tomlinson, Kansas City Mo—p 136
Review of Modern and Recent Developments in Science of Ophthalmology E C Ellett Memphis Tenn—p 144
Methods in Aerobiology O C Durham North Chicago Ill—p 153
Maneuver for Relief of Acute Aero Otitis Media H Lampert, New York—p 163
Ear Conditions in Pilots and Radio Operators H B Strauffer, Jefferson City, Mo—p 169

Emergency Parachute Oxygen Unit at High Altitudes

Boothby and his associates report a test experiment in a low pressure chamber, at a barometric pressure corresponding to 35,000 feet (11 kilometers), in which an aviator became unconscious within thirty-five to forty seconds after his oxygen supply was stopped while he was simulating preparations to bail out. His last act before becoming unconscious was to start the emergency oxygen supply. He did this too late, as he immediately "passed out" and the mouthpiece fell out of his mouth. The electrocardiograms which accompanied the entire experiment merely indicated that the cardiac rate had increased to 166 during the period of unconsciousness. This cardiac rate corresponds to about the limit at which cardiac output is probably maintained, on the basis of observations in patients with paroxysmal tachycardia. The authors conclude that in altitudes in excess of 25,000 feet (7.6 kilometers) the aviator has no time to lose and must start his emergency oxygen supply immediately. If he does not do this first, it will be too late. All other procedures for bailing out must be deferred until after oxygen is started. The emergency parachute oxygen apparatus must therefore be in place for instant use whenever high altitude flights are undertaken.

Journal of Infectious Diseases, Chicago

68:193-302 (May-June) 1941

- Experimental Infection of Rabbits with Duval's Chromogenic Acid Fast Bacillus from Human Leprosy W L Loving, New Orleans—p 193
Study of Living Virus of Infectious Myxoma of Rabbits by High Power Microscopy Rachel E Hoffstadt and Dorothy V Omundson, Seattle—p 207
Cultivation of Virus of Infectious Myxoma on Chorioallantoic Membrane of Developing Duck Embryo Rachel E Hoffstadt, Dorothy V Omundson and P Donaldson, Seattle—p 213
Additional Growth Factor Needed by Some Hemolytic Streptococci A Bass, S Berkman and F Saunders, Chicago—p 220
Precipitin Formation in Guinea Pig Charlotte A Colwell and G P Youmans, Chicago—p 226
Dissociative Aspects of Bacteriostatic Action of Sulfonamide Compound—Ruth A McKinney and R R Mellon Pittsburgh—p 233
Influence of Sulfanilamide on Mucoid and Smooth Phase Cultures of Hemolytic Streptococci in Vitro P Hadley and Ruth P Hadley, Pittsburgh—p 246
Variation in Peroxide Production by Beta Hemolytic Streptococci Ruth P Hadley P Hadley and W W Leathen Pittsburgh—p 264
Action of Sulfanilamide on Hemolytic Streptococci Lancefield Groups A and D in Growth Promoting and Non Growth Promoting Mediums L Neter, Buffalo—p 278
Nature of Emerica Nieschulzi Growth Promoting Potency of Feeding Stuffs II Vitamins B₁ and B₆ E R Becker and R I Dilworth, Ames Iowa—p 285
In Vitro Test for Chemotherapeutic Agents Used in Subacute Bacterial Endocarditis M H Uhley and L N Katz, Chicago—p 291

Journal of Pediatrics, St. Louis

19:1-146 (July) 1941

- Hemorrhagic Disease of Newborn Report of 358 Cases I Snedeker, Boston—p 1
Clinical Studies on Harmlessness of and Tuberculin Reactivity Following BCG Vaccination by Multiple Puncture Method S R Rosenthal and I S Neuman Chicago—p 16
Diabetic Children in Nondiabetic Camps W E Nelson Philadelphia—p 25
Sickle Cell Anemia Complicated by Acute Rheumatic Heart Disease and Massive Cerebral Hemorrhage Report of Case D W Walker and J P Murphy New Haven Conn—p 28
Serum Phosphatase in Infantile Scurvy H Shwachman Boston—p 38
Pathology of Mumps Encephalitis Report of Fatal Case W L Donohue Toronto Canada—p 42
Bacillus Morum Type 1 in Enterocolitis of Infants E Neter and N C Bender Buffalo—p 53
Gonococcal Conjunctivitis in Children Comparison of Treatment with Sulfanilamide and Sulfapyridine with Note on Sulfathiazole L K Sweet Washington D C—p 60
Treatment of Gonococcal Vulvovaginitis in Children Report of Eighteen Cases Treated by Implantation of Estradiol Benzoate J W Holmes, J A Jones N H Einhorn and L A Wikler Philadelphia—p 70
Value of Sulfanilamide and Scarlet Fever Antitoxin in Treatment of Scarlet Fever M B Gordon N H Solomon and S F Pearlman, Brooklyn—p 76
Ehlers Danlos Syndrome with Disturbance of Creatine Metabolism Report of Case G E Pittinos Staten Island N Y—p 85
Vacuum Seal for Preservation of Feeding Formulas W V Conzelmann Boston—p 90
The Timid, Dependent Child J H Conn Baltimore—p 91

Harmlessness of BCG Vaccination—Rosenthal and Neuman employed the multiple puncture or intradermal method for BCG vaccination of 675 newborn infants. The children were followed for from three to thirty-nine months and there were no ill effects attributable to the vaccine. Regardless of the method used, no child reacted positively before ten days, about half reacted at from fourteen to sixteen days and practically all reacted after twenty-three days. The uniformity of results suggests that only a few living organisms are required to produce the desired effect or that the newborn infant has a relative insensitivity to tuberculin. There were 191 infants vaccinated by the intradermal method, 484 by the multiple puncture method and there were 698 control children. Of the 675 vaccinated children between 3 and 39 months of age 7 died, and of the 698 control infants 11 died. This indicates that tuberculin vaccination is harmless. Of 258 newborn infants vaccinated on the third to the tenth day of life by the multiple puncture method and tuberculin tested within the following fifty-four days, 14 per cent reacted to old tuberculin at from eleven to thirteen days, 47.7 per cent within fourteen to sixteen days, 96.6 per cent between twenty-three and thirty-one days and 98 per cent between thirty-two and fifty-four days. The reactivity to one vaccination by the multiple puncture method was 99.7 per cent at three to seven months, 99.6 per cent at eight to thirteen months, 97.5 per cent at fourteen to twenty-one months, 93.4

per cent at twenty to twenty-seven months, 84.8 per cent at eight to thirty-three months and 78.8 per cent at thirty-four to thirty-nine months. The reactions to tuberculin of the non-vaccinated infants living and studied under similar conditions was 0 per cent at three to seven months, 19 per cent at eight to thirteen months, 5.8 per cent at fourteen to twenty-one months, 8.5 per cent at twenty-two to twenty-seven months, 11.6 per cent at twenty-eight to thirty-three months and 19.2 per cent at thirty-four to thirty-nine months. A comparison of the multiple puncture and intradermal methods of vaccination revealed that the former was simpler in application and that it yielded fewer complications. The reactivities to tuberculin following the two methods were comparable.

Mumps Encephalitis.—Donohue reviews the micropathologic picture of mumps encephalitis as it is reported in the literature, finds that the reports do not follow a set pattern and that the changes described by Bien and Wegelin are similar to those which he found in his case. He believes that these 2 instances are the only ones in which the micropathologic changes are adequately described and in which there can be no doubt that encephalitis complicated mumps. The lesions in his case, although fundamentally identical with those found in the central nervous system of the postinfection encephalitis following other diseases (smallpox, chickenpox, measles and vaccination), were not as severe. The fundamental lesion was a perivascular demyelination. If the lesions had not been so widespread or if pulmonary complications had not been present, recovery might have taken place. No virus studies were done on the tissues obtained.

Gonococcal Conjunctivitis in Children.—Sweet treated 59 patients having gonorrheal conjunctivitis with sulfanilamide, sulfapyridine or both. Since 1941 3 patients (respectively 10 years, 3 days and 2 days old) with gonorrheal conjunctivitis were treated with sulfathiazole. In each instance the ocular condition improved remarkably within twenty-four hours after therapy was begun. Smears free from gonococci were obtained from the eye discharges after one, six and three days, respectively. There were no toxic manifestations and there were no bacterial complications. Of 30 patients treated with sulfanilamide the smears of 24 were negative for gonococci within one to six days following therapy. Thirty-three patients, including the 4 who failed to respond to sulfanilamide, received sulfapyridine and 31 of them were cured (recovered) within from one to twelve days. Among these 31 were 3 of the patients who had not responded to sulfanilamide therapy. Only one corneal ulcer developed, this was in a patient on sulfanilamide therapy. Reports on more than 45 cases of gonorrheal conjunctivitis treated with sulfapyridine collected from the literature show the results to be comparable to those obtained by the author.

Sulfanilamide and Scarlet Fever Antitoxin.—According to Gordon and his associates, from February through May 1940 680 patients with scarlet fever were treated at the Kingston Avenue Hospital. The patients were mainly from the lower economic strata and were isolated for at least twenty-one days from the onset of the disease. Of 439 patients with a mild picture 294 were used as controls and 145 received sulfanilamide (0.065 Gm per pound of body weight a day divided into six equal doses). The initial dose of the drug was one half of the estimated daily dose. The total febrile period was around five days in the two groups. The difference in isolation period, twenty-four and twenty-five hundredths days for the control group as compared with twenty-two and eighty-seven hundredths days for the treated group, is significant. The percentage of complications for the control patients was 33 1/3 as against 13.1 per cent in the treated group. The incidence of otitis media was 9.3 per cent in controls and 2.07 per cent in treated cases. The results for the 238 patients with moderate involvement (fever, toxicity and complications) closely parallel those obtained in the mild group, 13 were controls, 65 were given scarlet fever antitoxin, 54 sulfanilamide and 46 the antitoxin and the drug. The total febrile periods were approximately equal in all groups, but slightly longer in the control group and shortest in the scarlet fever antitoxin group. The isolation periods were approximately the same in the treated

groups (twenty-five and five-tenths days) but were appreciably greater in the control group (twenty-nine and seven tenths days). The total incidence of complications was definitely diminished in all treated groups, the greatest decrease was among those receiving sulfanilamide. The incidence of complications in the group treated with sulfanilamide was 24.1 per cent, with scarlet fever antitoxin and sulfanilamide 23.8 per cent, with scarlet fever antitoxin 41.5 per cent and for the control group 60.3 per cent. The incidence of otitic complications in the sulfanilamide-treated groups (7.4 and 6.5 per cent) was approximately half that found in the other two groups (12.3 and 13.8 per cent). The incidence of toxic manifestations from sulfanilamide was 20 per cent, 71 per cent of which were cutaneous morbilliform eruptions, 57 per cent of which appeared on the tenth day of chemotherapy. Only 4 of the 111 patients receiving scarlet fever antitoxin exhibited (mild) serum disease.

Maine Medical Association Journal, Portland

32:161-186 (July) 1941

Medical Analysis of Second Series of 100 Operated Surgical Diabetics
E R Brunsdell, Portland—p 168
'On Nature of Psychoses' M Marquardt, Augusta—p 173

Michigan State Medical Society Journal, Muskegon

40:489-568 (July) 1941

Preoperative Preparation of Patient A L Lockwood, Toronto Canada—p 509
Diagnosis of Coronary Occlusion J B Carter Chicago—p 515
Carcinoma of Prostate J K Ormond and B Brush Detroit—p 525
Arthritis Contraindication for Typhoid Vaccine Fever Therapy W J Yott Detroit—p 528
Massive Arsenotherapy in Early Syphilis L W Shaffer, Detroit—p 529
Fractures of Neck of Femur Technique for Rapid Nailing Preliminary Report A D La Ferte Detroit—p 531
Postpartum Sterilization W G Birch, Sault Ste Marie—p 535

New England Journal of Medicine, Boston

225:1-50 (July 3) 1941

Mental Hygiene Clinics S Gagnon Boston—p 1
*So Called 'Mesentericoparietal Hernia' Report of Case H W Hudson Jr Brookline, Mass—p 4
Gallstones in Patients Under 30 Years of Age C Beavre, Boston—p 8

Mesentericoparietal Hernia.—Hudson describes a rare case of incarceration of the small intestine due to a congenital defect in the mesocolon in an 8 year old schoolboy and its successful surgical management. The anomaly is embryologically explained, its clinical and anatomic relations to other forms of faulty rotation and attachment of the colon are discussed and additional evidence is presented for the evolutionary basis of such anomalies, namely, imprisonment of essentially all of the intestine arising from the midgut, the defective mesenteric attachments and the coexistent volvulus of the small intestine. The designation of "hernia" is retained, although the anomaly is not a hernia in the usual sense.

225:51-90 (July 10) 1941

Polynuritis with Facial Diplegia Clinical Study F M Forster, Madeline Brown and H H Merritt Boston—p 51
*Carcinoma of Female Breast Interval Report on Results of Treatment S C Graves Brookline, Mass—p 57
Lew and Mental Disease W C Crossley, Fall River, Mass—p 61
Comparative Costs of Vitamin C in Fresh and Commercially Canned Fruit and Vegetable Juices A D Holmes Madeline G Pruitt and F Tripp, Stoneham, Mass—p 68
Pharmacology G P Grubfield, Boston—p 73

225:91-124 (July 17) 1941

Nonarterial Disorders Simulating Disease of Peripheral Arteries E A Edwards, Boston—p 91
What Sensible Living and Natural Recovery Can Do for the Cardiac Patient H B Levine and P D White Boston—p 101
Treatment of Hand Injuries S L Koch Chicago—p 105
Kidney Disease R Titz, Boston—p 109

Carcinoma of Female Breast.—According to Graves, 36.7 per cent of 376 consecutive patients treated for carcinoma of the breast in a survey covering thirty-five years were free from the breast in a survey covering thirty-five years after treatment. Radical mastectomy to be alive five years after treatment. Radical mastectomy was performed in 284 cases. Sixty per cent of the patients without axillary metastases were living at the end of five

years, but only 24 per cent of those with axillary involvement. Mastectomy should be used only in really bad operative cases, since it is impossible to rule out axillary metastases preoperatively. The prognosis for carcinoma of the breast is improving as the result of earlier admissions and prophylactic irradiation. Better results were obtained when irradiation with roentgen rays was given than when it was withheld. Prophylactic irradiation seems to benefit particularly cases of highly malignant tumors with no apparent axillary involvement but should be used routinely rather than only in advanced cases. Roentgen irradiation or radium therapy was seen to retard the tumor or cause its disappearance in about one third of the patients with recurrent disease. It seldom effects a five year cure. Cancer of the breast is not infrequent in young women though primarily a disease of elderly persons. The most significant factor at operation is the extent of the disease rather than the degree of malignancy. The author states that there is no criterion of absolute cure for mammary carcinoma. Many patients die of the disease fifteen or more years after operation.

Surgery, St. Louis

9:825-996 (June) 1941

Statistical Method: Vital Tool in Clinical Medicine. H. E. Campbell, Boston.—p. 825.

Bullet in Heart for Twenty-Three Years. G. G. Turner, London, England.—p. 832.

Excretion of Sulfanilamide and Sulfapyridine in Human Bile. W. W. Spink, G. S. Bergh and J. Jernista, Minneapolis.—p. 853.

Value of Local Implantation of Crystalline Sulfanilamide About Gastrointestinal Anastomoses in Dogs: Valuable Adjunct in Prevention of Peritonitis. R. L. Vairo, L. J. Hay and Beatrice Stevens, Minneapolis.—p. 863.

*Peritoneal Vaccination, Irrigation and Chemotherapy in Treatment of Experimental Peritonitis. E. R. Schmidt, A. R. Currier, F. G. Hidde and E. P. Adashek, Madison, Wis.—p. 871.

*Local Use of Sulfanilamide. L. W. Long and J. G. Dees, Jackson, Miss.—p. 878.

Surgery of Brain Tumors Today and Ten Years Ago. E. Sachs, St. Louis.—p. 883.

Mechanical Superiority of Annealed Stainless Steel Wire Sutures and Ligatures. D. J. Preston, Wilmington, Del.—p. 896.

*Role of Bronchoscopy in Treatment of Pulmonary Abscess. H. J. Moersch and A. M. Olsen, Rochester, Minn.—p. 905.

Primary Sarcoma of Stomach. A. L. Cameron and P. J. Breslich, Minot, N. D.—p. 916.

Cisternal Encephalography: Utilization of Spontaneous Filling of Ventricles with Air Following Withdrawal of Fluid by Cisternal Puncture. R. H. Young, Omaha.—p. 931.

Autoclaving Silver Clip. M. DeBakey, New Orleans.—p. 938.

Treatment of Experimental Peritonitis.—Schmidt and his colleagues studied direct smears and aerobic and anaerobic cultures of peritoneal exudates of 15 dogs at death. In 4 dogs with cecal perforation, direct smears showed gram-negative bacilli, streptococci, gram-positive spore formers and a few diptheroids. Aerobic cultures showed *Escherichia coli* and *Streptococcus viridans* (enterococcus). Anaerobic cultures showed the foregoing organisms and *Clostridium perfringens*. In the 11 dogs with ileac perforation, gram stains showed small gram-negative bacilli, gram-positive spore formers, streptococci and occasional gram-positive diplococci. Aerobic cultures revealed *E. coli* and *Str. viridans*. In 3, cultures also showed *Staphylococcus albus*, *Proteus vulgaris*, *Aerobacter aerogenes* and a gram-negative motile bacillus of the *Salmonella* group. The authors determined on dogs the effectiveness of peritoneal vaccination toward subsequent peritonitis and the therapeutic efficacy of peritoneal irrigations and chemotherapy in peritonitis. The commonly used antigen was coli bactragen, a suspension of formaldehyde-treated colon bacilli in gum tragacanth and aleuronate, and the drug was usually azosulfamide. For the peritoneal irrigations saline sodium ricinoleate (soricin) and zephiran (alkyl-dimethyl-benzene ammonium chloride) were used. The authors' conclusions are: 1. Peritoneal vaccination (with coli bactragen) in dogs prior to the operative production of ileac perforation protects against subsequent peritonitis. It should be given from twenty-four to seventy-two hours before operation. The vaccine produces a sterile peritoneal exudate rich in phagocytes which combats the infection in its early stages and controls it before an overwhelming bacterial growth occurs. Local defensive tissue changes, edema and congestion are a stage ahead of the bacterial offense following vaccination. 2. Peritoneal irrigations have no value either mechanically or chemically in the treatment or prevention of peritonitis. The washings do not reach all surfaces or the bacteria and their

toxins. Bacteria or bacterial toxins that have invaded tissues or lymphatic and hematogenous channels are not reached by irrigations. Continuous peritoneal lavage can cause shock and often results in death, even in an unaffected peritoneal cavity. 3. Sulfanilamide, azosulfamide, promin (glucoside derivative of 4:4'diaminodiphenylsulfone) and related drugs permit the physiologic immunity reactions to combat the invading bacteria. The low level of blood sulfanilamide in the dogs suggests that excretion is rapid and the more frequent injections would probably be more effective.

Local Use of Sulfanilamide.—Long and Dees discuss the local use of sulfanilamide crystals in the office and the hospital. Cases which can be treated in the office are local infections, small lacerations, boils, abscesses and the less severe injuries in which powder can be placed in the wound and the wound sutured without drainage. If the infection and injury seem serious enough, sulfanilamide is also given by mouth. When the use of ointment is indicated in office treatments the authors use equal parts of thoroughly mixed sulfanilamide crystals and hydrous wool fat. The types of cases requiring hospital care are: Crushing and lacerated injuries; in these, after the wound is debrided and scrubbed, it is dusted with sulfanilamide powder and closed without drainage. Compound fractures; after the injured part has been prepared, 20 Gm. of sulfanilamide for adults and proportionally smaller amounts for children is placed into the fracture site both beneath and on top of the periosteum and the subcutaneous area, the wound is closed without drainage and the part is immobilized in a plaster of paris splint. Carbuncles; in these the authors resorted to intravenous anesthesia, thorough incision with the radioknife, removal of infected tissue by electrocoagulation and packing with sulfanilamide powder. Incision and drainage and daily dusting of sulfanilamide powder into cavities of local abscesses have shortened the duration of the infection and apparently aided materially in the cure. Appendical and pelvic abscesses were treated most successfully without drainage by incising and irrigating the abscessed cavity, the placing of from 20 to 30 Gm. of sulfanilamide powder into them and closing the abdomen. Peritonitis following acute appendicitis has been treated successfully without any deaths by dusting the sulfanilamide powder into the peritoneal cavity. The absorbability of the drug is proportional to the peritoneal reaction present. The prophylactic use of sulfanilamide, by dusting into the pelvis, in chronic salpingitis, hydrosalpinx, supravaginal hysterectomy and tubo-ovarian abscess has been satisfactory. Its use is advantageous as a prophylactic measure following any gastrointestinal surgery with peritoneal soiling.

Bronchoscopy in Pulmonary Abscess.—Moersch and Olsen treated 193 patients with putrid pulmonary abscesses by bronchoscopic drainage. Abscesses that occurred secondary to tuberculosis, bronchiectasis, benign or malignant tumor of the bronchus or aspirated foreign body were not included. Of 105 patients treated between Jan. 1, 1925 and Dec. 31, 1930 satisfactory results were obtained in 65.5 per cent. The mortality rate was 5.7 per cent. Of 88 patients treated between Jan. 1, 1931 and Dec. 31, 1938 the results were satisfactory in 61.5 per cent and the mortality rate was 3.3 per cent. In 5 of the 9 patients who died empyema was associated with the abscess, and probably bronchoscopy should not have been attempted. Pneumothorax and pulmonary edema was the cause of death of the other 4 patients. Only 1 patient classified as having been treated successfully by bronchoscopic drainage suffered a recurrence during the following ten years, and in this instance the second abscess was found in the opposite lung. The duration of the pulmonary abscess before treatment was instituted determined prognosis; among 19 patients who had their abscesses less than four weeks 17, or 89 per cent, responded satisfactorily. For those patients whose abscesses were present for four weeks but less than three months the satisfactory results dropped to 69 per cent. The authors' procedure has been to keep the patient absolutely at rest and on postural drainage for two weeks and if at the end of this time the abscess has not begun to resolve spontaneously they proceed with bronchoscopic aspiration. If the region cannot be drained adequately or if some satisfactory improvement does not take place after two or three bronchoscopic aspirations, surgery is resorted to.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

16:81-144 (June) 1941

- Changes in Blood Produced by Dehydration in Infancy. A. G. V. Aldridge.—p. 81.
 Diagnosis and Conservative Treatment of Bronchiectasis in Children. Beryl E. Barsby and R. E. Bonham-Carter.—p. 95.
 Infantile, Obesity and Retinal Dystrophy: "Forme Fruste" of Laurence-Moon-Biedl Syndrome. R. W. B. Ellis and F. W. Law.—p. 105.
 Desoxycorticosterone Acetate and Estradiol Dipropionate Therapy in Newborn Infant. R. A. Miller.—p. 113.
 Survey of Primary Infantile and Juvenile Pneumonia. M. Elliott.—p. 121.
 Malignant Hypertension in Childhood. D. Court.—p. 132.

Glasgow Medical Journal

17:173-194 (June) 1941

- Interior of Living Eye Considered as Biochemical Laboratory. A. M. Ramsay.—p. 173.

Journal Obst. & Gynaec. of Brit. Empire, Manchester

48:293-420 (June) 1941

- Fibroid Tumors of Uterus. N. P. Mahfouz and I. Magdi.—p. 293.
 Analgesia and Anesthesia in Obstetrics. H. R. Griffith and J. R. Goodall.—p. 323.
 Urologic Complications of Carcinoma of Cervix Uteri. T. F. Todd.—p. 334.
 Fetal Abnormalities that Cause Difficult Labor. B. H. Sheares.—p. 354.
 Hepatic Hemorrhage in Stillborn and Newborn Infants: Clinical and Pathologic Study of Forty-Seven Cases. J. L. Henderson.—p. 377.
 Sarcoma of Femur Complicating Pregnancy: Case. J. St. G. Wilson.—p. 389.

Practitioner, London

146:353-416 (June) 1941

- Some Modern Problems of Tropical Hygiene. M. Watson.—p. 353.
 Treatment of Malaria. L. Rogers.—p. 361.
 Modern Views of Dysenteries and Their Treatment. E. H. V. Hodge.—p. 365.
 Diseases of Women in Tropics. Mary G. Blacklock.—p. 372.
 Morphine for the Wounded. P. Hamill.—p. 380.
 Inoculation Against Typhoid Group of Fevers. H. C. M. Williams.—p. 384.
 Some Common Causes of Painful Feet. P. Wiles.—p. 389.
 Science and Art of Medicine. A. J. Hall.—p. 395.
 Thirst. A. Abrahams.—p. 400.
 Unusual Development in Case of Hernia Treated by Injection. A. Kefalas.—p. 404.
 Modern Therapeutics: XXIV. Tonics. F. J. Charteris.—p. 405.

146:417-480 (July) 1941

- General Practitioner and Care of Newborn Baby. C. McNeil.—p. 417.
 Asphyxia Neonatorum. N. B. Capon.—p. 423.
 Infections of Newborn. S. Graham.—p. 430.
 Feeding of Newborn Baby. K. H. Tallerman.—p. 435.
 Treatment of Premature (Immature) Baby. W. R. F. Collis.—p. 442.
 Changing Aspect of Abdominal Surgery of Modern Warfare. G. Gordon-Taylor.—p. 448.
 Heat Stroke and Allied Conditions. C. Wilcocks.—p. 463.
 Minor Surgery of Ear. C. P. Wilson.—p. 469.

Quarterly Journal of Medicine, Oxford

10:65-138 (April) 1941

- *Vicious Circle in Chronic Bright's Disease: Experimental Evidence from Hypertensive Rat. C. Wilson and F. B. Dryom.—p. 65.
 Methemalbumin: I. Clinical Aspects. N. H. Fairley.—p. 95.
 Id.: II. Its Synthesis, Chemical Behavior and Experimental Production in Man and Monkeys. N. H. Fairley.—p. 115.

Vicious Circle in Chronic Bright's Disease.—Wilson and Byrom present experimental evidence that a vicious circle exists in hypertensive renal disease. They produced hypertension by the silver clip method of Pickering and Prinzmetal in rats from 6 to 9 months old. The authors' conception of a vicious circle arose from the demonstration by Goldblatt, Lynch, Hanzal and Summerville that reduction of blood flow through the kidney in animals gives rise to hypertension and from their own discovery that the hypertension produced by partial constriction of one renal artery gives rise to severe acute vascular lesions in the opposite kidney and in other organs. The character and extent of these lesions are such that the blood flow

through the kidney might be reduced. If the clamped kidney is removed, residual hypertension follows in two thirds of the cases. The degree of residual hypertension is related to the extent of the lesions in the remaining kidney. The vicious circle results from the effect of hypertension on the kidney; the hypertension produces vascular lesions, and these, by reducing the blood flow through the kidney, aggravate the hypertension. This vicious circle leads to sustained hypertension and progressive renal destruction. In discussing the clinical implications of this concept the authors point out that their work throws no light on the primary cause of either essential hypertension or nephritis, but it provides the reason for the unsatisfactory nature of many of the classifications; that the different types of Bright's disease which in their early stages are clearly distinct lose their separate identities as the disease progresses, pursue a common clinical course, characterized by hypertension and renal failure, and acquire a common microscopic renal picture. Once the view is accepted that the chronic stages of these diseases are determined by irreversible hypertension and that this hypertension may arise outside the kidney or as a result of primary renal damage, then only can an acceptable classification be derived from the study of the life history of the disease and of the primary etiologic factors. As the latter are still not known, the clinical features in the early stages should receive special attention and they should be correlated with the microscopic observations of patients who die before secondary hypertensive changes complicate the picture.

Tubercle, London

22:135-158 (June) 1941

- Radiographic Appearances of "Preclinical" Tuberculosis. G. Hilton.—p. 135.
 *Case for Discussion, with Special Allusion to Congenital Absence of Lung. D. G. Madigan.—p. 144.

Congenital Absence of Lung.—Madigan reports that a woman of 23 who was referred to the Penge Clinic as probably having pulmonary tuberculosis appeared healthy, but examination of the chest revealed shrinkage of the left hemithorax with concomitant features of unilateral pulmonary fibrosis. However, the physical signs were anomalous and did not conform to this condition. Roentgenograms suggested either unilateral fibrosis or massive collapse of the left lung. The size of the affected side was considerably reduced and almost completely opaque to the roentgen rays. The mediastinal structures were displaced toward the left, and there was increased obliquity of the ribs. A hypertrophied emphysematous configuration was to be seen in the right hemithorax. In addition, heavier and more numerous pulmonary markings furnished evidence of hypertrophied blood vessels. An accurate interpretation of the abnormalities exhibited was problematic. The observations at a bronchoscopic examination were (1) displacement of the trachea to the left with no inflammatory changes of the mucous membrane, (2) a normal carina, (3) a patent left main bronchus, a nonoccluded lumen and no evidence of external pressure and, (4) on visualization of the main divisions of the left bronchus, a trace of pus in the left lower lobe; the mouths of the visualized bronchi were abnormally small and the first dorsal branch arose abnormally from the left main stem. A diagnostic artificial pneumothorax was impossible, as an air space could not be established. At tomography an elongated air space was visible posteriorly opposite the third, fourth, fifth and sixth ribs. The left main bronchus could be seen dividing in the 7 cm. section. No pulmonary markings were present on the left side. The right lung extended across the midline anteriorly, suggesting compensatory hypertrophy. No etiologic evidence was elicited from the patient or her mother. There was no evidence of an inhaled foreign body; moreover, such bodies usually enter the right rather than the left bronchus. There can be little doubt that the lesion was a congenital defect. The late manifestation of symptoms might have been due to the fact that the patient did not have measles and pertussis, which bring to light any existing pulmonary damage, her change of domicile two years before from the north to the south and her change of occupation eighteen months before from domestic duties at home to factory life in London.

Schweizerische medizinische Wochenschrift, Basel**71:601-632 (May 10) 1941. Partial Index**

- Atelectasis in Spontaneous Pneumothorax. J. Palacio and E. S. Mazzei.—p. 601.
Facultatively Open Pulmonary Tuberculosis (Demonstration of Tubercle Bacilli in Absence of Sputum). J. L. Burekhardt.—p. 604.
Value of Gastric Evacuation of a Fasting Stomach in Search for Tubercle Bacilli. M. Gilbert.—p. 609.
External Treatment of Lupus by Curettage and Electrocautery. J. Golay.—p. 611.
*Types of Hematogenous Pulmonary Tuberculosis. St. J. Leitner.—p. 612.
Contact Therapy with Roentgen Rays in Lupus Carcinoma. O. R. Mengis.—p. 624.

Hematogenous Pulmonary Tuberculosis.—Leitner examined the lungs of 467 patients with extrapulmonary tuberculosis. He found that 174 patients were free from pulmonary foci, except for residues of the primary complex. The remaining 293 patients exhibited apical metastases, early and late dissemination, interval forms with and without cavities, cavernous tuberculosis, solitary or multiple infiltrates, exudative pleurisy and miliary tuberculosis. Eighty-seven patients stated that the pulmonary process was first to develop. Apparently extrapulmonary and pulmonary tuberculosis are not mutually exclusive. The longer the extrapulmonary forms can be observed, the oftener will the pulmonary processes be detected. The most important diagnostic aid in detecting the various forms of hematogenous pulmonary tuberculosis is the roentgenogram. The hematogenous forms of pulmonary tuberculosis are characterized by insidious onset and development, but the physical signs are practically the same as in isolated pulmonary phthisis. Hematogenous tuberculosis has a somewhat unique position as regards the antigen-antibody reaction. The Meinel reaction for tuberculosis may be negative or weakly positive. The slight excess of antibodies seems to indicate a weak humoral defense, and this may be a contributing factor to the hematogenous distribution. The tuberculin allergy is generally quite pronounced. Thus the cutaneous sensitivity to tuberculin and the seroreaction may show contradictory behavior. The open, cavernous cases of hematogenic pulmonary tuberculosis respond relatively well to collapse therapy.

Deutsche medizinische Wochenschrift, Leipzig**67:281-308 (March 14) 1941. Partial Index**

- *Importance of Microscopy with Electronic Rays for Structural Research and Microbiology. H. Ruska.—p. 281.
*Effects of Neoplastic Interpretation of Leukemias. K. Apitz.—p. 286.
*Simplified Dietetic Treatment of Peptic Ulcer. J. Dreves and H. Voss.—p. 289.
Military Service Injury in Patients with Pulmonary Tuberculosis. O. Steinmeyer.—p. 292.
Prognosis of Angina Pectoris. S. Dietrich.—p. 294.

Electronic Microscopy in Structural Research and Microbiology.—According to Ruska the electronic or "Super" microscope makes it possible to visualize an object about a million times as small as one visible with the ordinary microscope. The examination is made in a vacuum. The electrons transilluminate layers too thin for ordinary microscopy. The slides consist of organic films of collodion 0.00001 mm. in thickness. It may become possible to establish a bridge between morphology and chemistry with the aid of ultramicroscopy. Beginning with the synthesis of organic substances, the chlorophyll grain of the plant cell, it was possible to explain the structure of the chloroplast and to make it appear probable that not only the synthesis of sugar but also the synthesis of virus proteins takes place in the chloroplasts. A chloroplast from the tobacco plant is shown in which grains and stroma and round disks can be seen. In virus diseased plants several rod shaped virus protein molecules can be seen beside the grains. These rods seem to be in direct connection with the chloroplastic stroma. Thus the chloroplast becomes the seat of the pathologic process within the cell. Molecules of animal starch, or glycogen, have been visualized. The author shows the structure of fibrin, of a partial transverse section through cell wool, the micelle structure of the secondary wall of cotton hair decomposed by hydrochloric acid, "crystallized" tobacco mosaic virus protein, the colloidal gold test, the thorn-apple shape of an erythrocyte, a partially hemolyzed erythrocyte, the torn mem-

brane of a completely hemolyzed erythrocyte, staphylococci on which membranes can be seen, colon bacilli with detached membranes, the bacillus of chicken tuberculosis, vaccine and other viruses.

Neoplastic Interpretation of Leukemias.—Apitz points out that the leukemias are now regarded as a special form of a neoplasm. This interpretation poses the problem of differentiating borderline cases and cases of combined leukemia and circumscribed neoplasm. Concurrence of tumor and leukemia in the same patient is possible. The microscopic examination of removed lymph nodes does not permit differentiation between lymphosarcoma and lymphadenosis; it must be complemented by blood studies and by studies of the blood forming organs and of the sternal marrow. The demonstration of a local sarcomatous blood cell proliferation does not exclude the simultaneous existence of a systemic disease. During the therapeutic irradiation of a lymphosarcoma not only the local response should be watched but also the behavior of the entire organism, particularly the blood picture, because a metastatic leukemia may develop. Circumscribed plasmocytomas or myelomas should be subjected to surgical treatment only when the dissemination of plasmocytoma cells can be excluded by sternal puncture and roentgenoscopy.

Diet in Gastric Ulcer.—Dreves and Voss report results obtained with Meulengracht's diet, which consists of mixed puréed meat and vegetables, in 57 patients with bleeding gastric ulcers and in 146 patients with nonbleeding ulcers. Two of the patients with bleeding ulcers died (3.5 per cent). The diet was successful in 135 of the 146 patients with nonbleeding ulcers; it failed in 8 because of complications, while 3 died of intercurrent disease. The average duration of treatment was thirty days for patients with bleeding ulcer and twenty-seven for those with nonbleeding ulcers. The results indicate that the Meulengracht diet gives results which are at least as good as those of the customary diets.

Kekkaku, Tokyo**19:151-236 (March) 1941. Partial Index**

- *On the Pathogenesis of Lymphadenitis Colli Tuberculosa. H. Matuno.—p. 209.

Tuberculous Cervical Adenitis.—Matuno made a detailed study of the tonsils and other lymphoid tissues of the neck in 60 patients, altogether a total of 1,443 lymph nodes and 138 tonsils. The hematogenous nature of tubercle formation in these tissues was evidenced by the fact that the earliest stage of the tubercles was seen at the terminal branches of the arterial ramifications as well defined nodules either in the cortex or in the medulla limited by the sinuses. Favoring the theory of lymphogenous origin of tubercle formation was evidence of various degrees of exudative inflammation at the marginal, interstitial and medullary sinuses of the lymph nodes, in response to the tubercle bacilli or their catabolic products which entered the nodes by way of the afferent channels. In the tonsil the hematogenous infection was usually found localized either within the lymphoid follicles or in their neighborhood in the form of miliary tubercles which tended to undergo healing fibrosis. Little evidence was found of lymphogenous infection in the tonsil; such changes as had occurred from lacunar epithelium tended to undergo necrosis, making probable the spread of the disease to the interfollicular tissues. In individuals without evidence of localized and well defined tuberculous infection in the respiratory or gastrointestinal tract, the microscopic study of cervical lymph nodes often demonstrates the presence, as well as the nature and extent, of the disease. Information derived from these studies also suggests the probably tuberculous nature of the disease in the organs and tissues served by the lymphatic tissues under consideration. Tuberculous cervical adenitis as an independent disease entity can, though rarely, occur during the generalized stage of Aschoff and Ranke, not only by way of the blood stream but more often by the lymphatics from the hematogenous focus in the lymphoid tissue. Retrograde lymphogenous infection of the cervical lymph nodes from the tuberculous nodes in the supraclavicular areas rarely occurs.

Taiwan Igakkai Zassi, Taihoku, Formosa

40:427-646 (March) 1941. Partial Index

*Local Reactions of Infected Skin, Clinical Symptoms and Blood Changes in Experimental Human Infection with *Strongyloides Papillosus* and *S. Fülleborni*. S. Tomita.—p. 427.

Experimental Human Infection with *Strongyloides*.

—Tomita conducted experimental transmission of two varieties of *Strongyloides* in 6 human subjects and reports his observations on the resulting cutaneous reactions, clinical manifestations and blood changes at varying intervals. *Strongyloides papillosus* is a parasite found in hogs and *Strongyloides fülleborni* in Formosan monkeys, both having a somewhat varying degree of pathogenicity in other species of animals. Cultures of these parasites were obtained from the feces of hogs and monkeys, and the young parasites, growing after three to six days of incubation, were used in transmission experiments. The skin over the outer aspect of the thigh was first thoroughly cleansed with soap and water and the area then covered with a thin pad of absorbent cotton about 4 cm. in diameter, over which had been sprayed approximately 5,000 parasites suspended in a small amount of water. After the cotton had been wet with additional water, the transmission pad was tightly bandaged and allowed to remain in contact with the skin for twenty-four hours. At the end of that period the cotton was removed, washed in water and examined for the presence or absence of the parasites. From these experiments the author found that both *S. papillosus* and *S. fülleborni* could be transmitted to man through the intact skin, which at the site of contact caused the skin to become red and hot, accompanied by a tingling sensation and occasionally by development of vesicular lesions. The skin reaction following application of *S. papillosus* was much more severe than that of *S. fülleborni*. In spite of the severity of local reaction due to *S. papillosus*, no systemic reaction occurred. But, while *S. fülleborni* produced only slight local reaction, it gave rise to such acute systemic reactions as urticaria, nervous manifestations, gastrointestinal disturbances and sometimes fever. The transmitted parasites migrated to the intestine, and ova were recovered from the fecal material. This difference in the pathogenicity of the two strains of parasites studied was also reflected in the degree of blood eosinophilia, which was the only hematologic change noted. The ova of *S. fülleborni* could be detected in the stools of the infected patients for as long as eleven months after transmission.

Sovetskaya Meditsina, Moscow

Pp. 1-46 (No. 7) 1941. Partial Index

Epidemiology of Typhoid and Its Combat in Rural Areas. L. V. Gromashevskiy.—p. 3.

*Typhoid in Vaccinated. E. E. Shtaynshneyder.—p. 8.
Surgical Treatment of Typhoid Peritonitis. M. A. Mir-Kasimov.—p. 11.
Bacteriophage Therapy of Typhoid. M. B. Aleksandrov, A. A. Dyakova, Z. A. Raykhelson and E. G. Melnik.—p. 13.

Typhoid in Vaccinated.—On the basis of observation of a large number of typhoid cases occurring in persons who were not vaccinated and in those who were, Shtaynshneyder concludes that typhoid in vaccinated persons presents a special form of the disease different from the usual clinical forms of typhoid. The prophylactic action of the vaccination lasts for five or six months, after which the immunity is considerably lowered. The epidemiologic significance of typhoid in the vaccinated derives from the fact that it is more tardily recognized because of its atypical clinical picture. The onset is usually abrupt. The fever is relatively low, between 100.4 and 102.2 F. The febrile stage lasts from eleven to twenty days as compared with twenty-five to thirty days in the unvaccinated persons. Symptoms of central nervous system involvement are exceptional. The period of convalescence amounts to from eight to fourteen days as compared to the average of twenty-five to thirty days in unvaccinated persons. The Widal reaction is particularly important as a diagnostic sign and occurs on an average on about the fifteenth day of the disease. Positive blood cultures are obtained in only a small percentage of the cases. The incidence of bacillus carriers in the author's material amounted to 0.6 per cent, while in the unvaccinated it varies from 2.5 to 7.5 per cent. The mortality amounted to 2.3 per cent as compared with the mortality of from 5 to 8 per cent and higher in the unvaccinated.

Nordisk Medicin, Stockholm

10:1191-1270 (April 19) 1941. Partial Index

Hospitalstidende.

*Treatment of Some Neuromuscular Diseases with Synthetic Vitamin E. (Amyotrophic Lateral Sclerosis and Progressive Muscular Dystrophy). J. Bang, L. Einarson, Aarhus M. Fog and A. Ringsted.—p. 1201.
Tuberculosis in Aged. H. Harpøth.—p. 1212.

Synthetic Vitamin E for Neuromuscular Diseases.—

Bang and his associates report 8 cases of neurogenic muscular atrophy and 3 of progressive muscular dystrophy treated for from one to twelve months with vitamin E. There is evidence that vitamin E may have an effect at least on neurogenic muscular atrophy. They suggest as a working hypothesis that vitamin E exerts a therapeutically favorable effect on the degenerative fissure formation and the vacuolar and tubular degeneration in the muscles.

Ugeskrift for Læger, Copenhagen

103:427-458 (April 3) 1941

*Spontaneous Subarachnoid Hemorrhage: Symptomatology, After-Examination, Prognosis. H. C. A. Lassen and T. Vanggaard.—p. 427.
So-Called Spontaneous Subarachnoid Hemorrhages, with Special Regard to Prognosis and Eventual Psychic Changes. A. Leth Pedersen.—p. 439.

Two Cases of Aneurysm in Middle Cerebral Artery: Casuistic Report. Erna Christensen.—p. 446.

Spontaneous Subarachnoid Hemorrhages.—Lassen and Vanggaard's discussion is based on 43 cases treated from 1932 to 1939. They state that spontaneous subarachnoid hemorrhage is rare in the first decade of life and after 60; half of their patients were under 40, and the average age was 40. In 42 cases there was headache, usually apoplecticiform and violent, in the initial stage; pain in the neck occurred in 15, vomiting in 37, dizziness in 14, partial insensibility in 28 and complete loss of consciousness in 17. Complete loss of consciousness was frequently apoplecticiform, usually of short duration. During hospitalization stiffness of the neck was established in 40, spasms in 5, unilateral or bilateral Babinski in 22, absence of abdominal reflexes in 12, slight focal symptoms in 16, massive focal symptoms in 3. The temperature was normal in 27 out of 32 in the initial stage. Thirteen of 32 patients showed pathologic changes, most often stasis in the blood vessels of the retina; 6 of the 13 had grave hypertension. In all cases the spinal fluid was sanguinolent or xanthochromatic with many polymorphonuclear leukocytes at the start of the disorder. Later mononuclear pleocytosis predominated. There was moderate rise of temperature after the initial stage, lasting from one to two weeks. The sensibility generally cleared up in a day or two, but in some cases unconsciousness continued until death. Removal of spinal fluid was often of symptomatic-therapeutic value, and no symptoms were seen which pointed to renewed hemorrhage caused by the reduction of the blood pressure through this procedure. The cause of the hemorrhage was established in only one instance—hemorrhagic pachymeningitis. In the 31 patients discharged the headache disappeared in from three to five weeks, stiffness of the neck in four or five weeks. After-examination of 27 of the 31 patients after from one-half to seven and a half years (half of them after from three to seven and a half years) showed that 20 were fully able to work, 6 partly able and 1 wholly unable. Headaches, nervousness or impaired memory persisted in 24. The likelihood of renewed hemorrhage is slight if there have been no signs of renewed bleeding during the first three months after the primary attack. Unfavorable prognosis is indicated by (1) complete loss of consciousness, (2) moderately grave or grave hypertension, (3) strongly increased pressure of the spinal fluid, (4) positive Babinski, (5) spasms after the initial stage, (6) gradually increasing pulse and rise of temperature. The prognosis seems more unfavorable if there is a history of previous manifest subarachnoid hemorrhage or acute cerebral attacks with a similar picture. No plausible etiologic factor was found in 16, there were pathologic changes of doubtful significance in 9, hypertension in 13 (marked in the 10); 1 patient had severe migraine, 1 a positive Wassermann reaction in the blood and spinal fluid without clinical signs of syphilis, 1 thrombopenia, 1 hemorrhagic pachymeningitis and 1 possibly an aneurysm in the basilar artery (clinical diagnosis).

THE STUDENT SECTION

of the

Journal of the American Medical Association

Devoted to the Educational Interests and Welfare of Medical Students, Interns and Residents in Hospitals

SATURDAY, SEPTEMBER 27, 1941

Concerning Interns and Their Health

REGINALD FITZ, M.D.

BOSTON

Two years ago the Trustees of the American Medical Association asked of the Council on Medical Education and Hospitals that a study be made of the health of interns. Such a study was begun at once. A report of the preliminary steps of the investigation was presented to the House of Delegates¹ a year ago. Briefly, there appeared no evidence to suggest that the health of interns was notably bad; yet among sixty-one interns who during the three year period of 1937, 1938 and 1939 were compelled to discontinue work because of illness, tuberculosis was an important and significant factor. This disease occurred in 36 instances and thus caused 59 per cent of all the serious casualties. This information was obtained by inquiry from 235 hospitals approved for intern training.

During the past year the problem of intern health has been further investigated from a different angle. Communications were sent to 5,301 physicians who received their medical diplomas from recognized schools in 1937. They were asked to give an account of their hospital experience, and also the nature of any illness suffered during it, with a line stating the amount of time lost from work. This method of studying intern health was adopted in the belief that physicians in general might be interested in a study of this nature and that, as a typical group, men and women four years out of medical school would remember their own illnesses with sufficient vividness to make the data obtained both interesting and accurate.

Two thousand, eight hundred and forty replies to the questionnaire have been received; in addition there are records in the files of the American Medical Association of 34 fatalities known to have occurred among the men who

graduated in that year. This paper reports a digest of the information obtained in this manner.

One of the most striking facts elicited from this study is the present desirability of prolonged periods of hospital life in the minds of young doctors: 807 (28 per cent) were satisfied with but one year of hospital experience, 905 (32 per cent) had hospital experience up to two years and 1,131 (40 per cent) have had three or more years of hospital residence. Of the latter group, many still are occupying resident posts of one sort or another. The zeal on the part of young doctors and their teachers to lengthen rather than shorten the program of medical education through postgraduate work in hospitals is amply illustrated by these figures.

The influence of a long period of secluded, almost monastic existence in a hospital on a young doctor's health is now by necessity of considerable general interest. For such a life by no means creates immunity to sickness. Of the 807 doctors who had one year internships, 395, or 49 per cent, lost no time from work. Of the 905 who lived in hospitals for two years, 264, or 29 per cent, escaped without illness. Of the 1,131 who lived in hospitals for three years or more, only 179, or 16 per cent, failed to be sick.

Such authorities as Dr. Haven Emerson and Dr. Louis Dublin consider that figures such as these are entirely usual. If a group of persons spent their lives in a hospital, they say, all would fall ill eventually, and the longer one had the group under observation the fewer would be those remaining continuously well.

The types of illness to which these particular interns and residents fell heir make a glossary of diagnostic terms. Naturally, infections of the upper respiratory tract were the commonest single incapacitator; much more noteworthy, however, were the bizarre diseases and accidents that were reported. There were instances of tularemia, of dengue fever, of typhus and of typhoid. There were cases of whooping cough, mumps, chickenpox, measles and scarlet fever.

¹Read before the Section on Preventive and Industrial Medicine and Public Health at the Ninety-Second Annual Session of the American Medical Association, Cleveland, June 5, 1941.

This study was made possible through the courtesy of the Council on Medical Education and Hospitals. Mrs. J. R. Spencer assisted in classifying and tabulating the data which are reported. The figures from the Boston Edison Company were prepared by the Division of Industrial Hygiene, National Institute of Health.

1. Proceedings of the House of Delegates, New York Session, J. A. M. A., 114:1225 (May 11) 1940.

One intern was given four months leave of absence in order to have a baby. Another got so badly sunburned while skiing as to necessitate two or three days of cooling off. There were several cases of prostrating reactions to typhoid immunization, to poison ivy or to poison oak. There were many automobile accidents obtained in riding the ambulance. There were 24 cases of infectious mononucleosis and 31 cases of catarrhal jaundice, and there even was 1 case of undulant fever thought to have been acquired from hospital milk. There were gastric ulcers, duodenal ulcers, renal calculi and gallstones. There were sprains and fractures, infections of the arms, toes and fingers, and appendix operations galore. In fact almost any diagnosis that one might ask for was listed.

The illnesses on the whole were not incapacitating for long periods of time and proved to be of little more than a minor nuisance. Table 1 has been constructed on data from all cases in which sufficiently accurate information was available.

TABLE 1.—Periods of Illness of Interns and Residents

Number of Days Missed Because of Illness	One Year Interns (410)	Two Year Interns and Residents (507)	Three-Year or More Interns and Residents (909)
Less than 7 days	231 (57%)	279 (47%)	294 (32%)
8-14 days	93 (23%)	116 (19%)	215 (24%)
15-21 days	15 (4%)	60 (12%)	130 (14%)
22-28 days	11 (3%)	25 (4%)	48 (5%)
More than 4 weeks	38 (9%)	109 (18%)	221 (24%)

As can be seen, minor illnesses of short duration predominated, though apparently—and probably on the law of averages—the longer a man lived in an institution the better chance he had of losing increasing amounts of time from sickness and, presumably, of contracting some disease which could properly be termed serious. It was relatively uncommon for an intern or resident to be ill more than once or twice in the course of a year. There were occasional exceptions, however, certain ones apparently having little resistance or much bad luck and as a result losing several weeks' time in the course of their hospital experience because of repeated minor misfortunes.

There were three diseases which were encountered so frequently as to make them seem of significant importance. These were appendicitis, pneumonia and tuberculosis.

There were 142 cases of appendicitis.² The appendicitis problem as presented by these figures offers an interesting field for speculation. Among 585 interns and residents living in the Peter Bent Brigham hospital during the past twenty-five years, only 8 cases of appendicitis were uncovered. During most of these years I

have lunched in the hospital nearly every day and can vouch for the fact that no serious epidemics of indigestion ever developed. Among the 2,840 interns and residents from all over the country who answered my appeal for information, the occurrence of 142 appendectomies seems disproportionately high. In addition, there were 62 cases of gastroenteritis, 21 of diarrhea, 15 of alleged food poisoning severe enough to make work temporarily impossible and 34 complaints regarding the hospital bill of fare. I cannot help wondering whether poor food was not a factor in causing the stomach-aches that led to so many operations, and therefore whether the manner in which interns are fed does not warrant more careful attention than it often receives. Certainly, in any modern business it is a token of inefficiency to have many workers laid off from a cause so readily preventable.

To be sure, another explanation of the frequency of appendicitis among these interns and residents may be that the modern young doctor has faith in the prophylactic usefulness of getting rid of his appendix. When living in a hospital and acquiring a stomach-ache, why not have an appendectomy on general principles, without expense and performed by one's friends? The time lost from the operation is nowadays ordinarily only ten days or a fortnight, the risk of operation is negligible—though three of the fatal cases in the series were caused by this condition—and the knowledge that one is appendix-less may well give a physician a desirable sense of digestive security for the rest of his life.

There were 103 cases of lobar pneumonia and bronchopneumonia.³ The incidence of pneumonia also opens up an interesting line of reasoning. In searching for a control group in which to compare the normal incidence of pneumonia in relation to all sorts of infections of the upper respiratory tract, the suggestion was offered that figures from the Surgeon General's annual reports⁴ might be useful. These figures yield information on two groups of persons important to such a study: officers and white soldiers serving in the United States and Alaska; for both groups are given figures on illness which include all cases of men sick enough to be hospitalized. In establishing the figures which are recorded in the following table, "respiratory infections" include those diseases of the upper respiratory tract likely to be caused or complicated by the pneumococcus or streptococcus, infections such as the common cold, tonsillitis, otitis media and bronchitis.

3. There were 26 absences because of pneumonia among male workers of the Boston Edison Company during 1938, 1939 and 1940.

2. There were 69 absences because of appendicitis among male workers of the Boston Edison Company during 1938, 1939 and 1940.

4. Report of the Surgeon General, U. S. Army, to the Secretary of War, 1938, 1939, 1940, Washington, D. C., U. S. Government Printing Office.

The figures given in table 2 probably do not warrant as sweeping conclusions as might be drawn from superficial examination. But they are suggestive. They suggest that officers, a little older than the enlisted men and probably living in more protected quarters, are less liable to contract pneumonia in connection with exposure to respiratory infections than are the enlisted men. On the other hand, doctors are much more likely to contract pneumonia in connection with infections of the upper respiratory tract than are soldiers. While these figures may caricature the true facts because of differences in diagnosis and methods of assembling the data or from other factors, yet they point out a trend which is easily credible. It is entirely reasonable to expect that interns and residents should contract pneumonia more easily than the average individual, exposed as they are in a busy hospital to persons with all kinds of infections, leading a confined life and often overworked. From the point of view of industrial hygiene, this fact also warrants further study for the purpose of developing rational methods to improve intern health.

There were 44 cases of pulmonary tuberculosis and 4 of pleurisy with effusion assumed to be tuberculosis.⁵ This was the most expensive disease from the viewpoint of loss of time.

Considering that among all United States Army officers during the last three year period only 34 cases were discovered and that the incidence of the disease among the white enlisted men during that time averaged 1.51 cases per thousand a year—which would yield in three and a half years only about 22 cases in 5,000—the incidence of 48 cases of tuberculosis as reported among these interns and residents seems unduly high. Obviously, so small an experience is of no statistical value whatever, yet perhaps it is worth mentioning that of these 48 cases 5 occurred in women. This fact is stressed because only about five women per hundred are encountered in the student population of our medical schools, and among the 2,840 replies to the questionnaire for this study only 100 came from women. From this single sampling, meager as it is, I believe that hospitals which train women interns should be urged to take special precautions to prevent the development of tuberculosis in their female resident staff, as the stubbornness and costliness of tuberculosis in young women is notorious.

A letter was sent to all those in this series who had been afflicted with tuberculosis, asking for information as to how in their case the disease was discovered and for ideas as to how it might have been prevented. Thirty-five

answers were received, and the ensuing correspondence has proved most enlightening.

There clearly is developing a sound tendency in our medical schools to submit each student at entry to a tuberculin test and a roentgen examination of the chest. In many schools the positive reactors are reexamined roentgenographically each year thereafter, the negative reactors are retested each year and all seniors, regardless of their tuberculin reactions, are given a final roentgen examination shortly before graduation. Thus many students are now able to state on graduation that, as judged by these tests, they have no demonstrable evidence of any active focus of pulmonary tuberculosis.

The student becomes a doctor when he receives his diploma at his graduation exer-

TABLE 2.—Incidence of Pneumonia and Respiratory Infections

	Pneumonia (Lobar and Broncho)	Respiratory Infections	Ratio of Pneumonia to Respiratory Infections
	Army Officers		
1937	24	1,987	
1938	35	2,273	
1939	42	2,401	1.66
Total	101	6,661	
	Enlisted White Men in United States and Alaska		
1937	378	12,878	
1938	454	17,000	
1939	435	17,350	1.57
Total	1,267	47,224	
	Interns and Residents		
1937			
1938	103	1,717	
1939			1.17

cises and soon begins his internship. Here he may be overworked, perhaps not well fed, and he may be exposed to tuberculosis in a variety of ways. If he contracts tuberculosis it is likely to develop insidiously, so that several months often elapse before the ease is recognized. Occasionally he may have a sudden hemoptysis and thus be treated more promptly.

A Pirquet test on one man in 1935 as a student was negative. Roentgenograms made once a year thereafter were negative—the last negative film being made in January 1939. In March or April, as an intern, he began to feel thoroughly tired out and presently to notice dyspnea on exertion and night sweats. A roentgenogram in July revealed minimal pulmonary tuberculosis.

In March 1938 and January 1939 roentgenograms of the chest were negative in a second case. Then as an intern he began to lose a little weight, to feel tired out and to lose his appetite—phenomena which he regarded as natural sequels to the hard work he was doing. A roentgenogram in May 1939 showed a small cavity in the upper portion of the right middle lobe.

During three years in medical school tuberculin tests and roentgenograms were negative in a third case. In January 1937 the tuberculin test became strongly positive, though in April the roentgenogram

5. There were 6 absences because of tuberculosis among male workers of the Boston Edison Company during 1938, 1939 and 1940.

was negative. In October 1937, shortly after his internship had commenced, the man felt a sharp pain in the right lower part of the chest. A roentgenogram now showed density in the right hilus with a suggestive area of infiltration in the third interspace. He continued work in spite of this finding and in January 1938 a roentgenogram revealed consolidation of the lower lobe of the right lung. Now the sputum was positive.

Roentgenograms and tuberculin tests were negative during the first three years of medical school life in a fourth case. During the senior year the tuberculin test became positive though roentgen films of the chest continued to be negative. In January 1940 a roentgenogram taken because of "plenisy" showed a soft, well circumscribed lesion in the upper lobe of the left lung.

Almost all the doctors with whom I have corresponded have agreed on one point: They feel that on top of exposure hard work, poor food and chronic fatigue were the most important factors in leading to their breakdowns.

TABLE 3.—*Causes of Deaths of Interns and Residents*

Infections	16
Pneumonia	3
Appendicitis	3
Subacute bacterial endocarditis	3
Tuberculosis	2
Brain abscess	2
Meningitis and pneumonia	2
Cholelithiasis and peritonitis	1
Accidental trauma	6
Automobile accidents	5
Drowning	1
Malignant disease	4
Carcinoma of rectum	1
Teratoma of testis	1
Acute lymphatic leukemia	1
Hodgkin's disease	1
Coronary occlusion (ages 20, 23 and 25)	3
Self induced	3
Cerebral hemorrhage (age 20)	1
Nephritis	1

The food question, which is remediable, is one thing. How to avoid hard work and chronic fatigue during one's hospital career is another. In my experience the best interns invariably are the most energetic and conscientious students, and the better the intern the harder he works and the more responsibilities he assumes.

I spoke to one of my Brigham Hospital colleagues about the matter recently. He reminded me that when he and I were in residence together in the hospital some twenty-five years ago we thought that we were perpetually tired and chronically overworked. Since then the resident staff has assumed almost acromegalic proportions to keep up with new kinds of treatments and procedures that have been devised, and one might imagine that the present staff is well able, from point of numbers, to care for this extra load without risk of being overworked. Yet not long ago one of the medical interns kept a week's diary for my benefit. I have edited mildly a typical day:

At 8:30 to the wards to give treatments such as mercupurin and liver. In addition, there were lumbar punctures to be made and venous pressures or circu-

lation times to be recorded; and in my spare moments requisition slips for roentgenograms and electrocardiograms to be filled out, or histories taken by students to be corrected.

Ward rounds began at 10 o'clock, lasting until a little after 12. As usual there were interruptions: new patients to be admitted, doctors to be seen who were inquiring about patients they had sent in and many telephone calls to be answered so that rounds could go forward without interruption.

At 12:15 was the clinical-pathologic conference, which lasted for an hour: A good show with a distinguished visitor led away from the correct diagnosis of gallstone disease by the false scent of a small bleeding polyp in the large bowel.

At 1:15 lunch for a quarter of an hour, and then a brief glimpse at THE JOURNAL and the morning paper. Then at 1:45 there were some special patients in the outpatient department to be attended to.

Back to the wards as soon as possible after 2 o'clock until supper time to take histories, examine patients, give treatments and keep the students busy on their cases.

Supper at 6 o'clock. At 6:30 back to the wards to start parenteral fluids, to complete the admission work-ups on the new patients, and to write records.

A bite of supper at 10 o'clock and then more histories to edit, more records to write and evening rounds to see that every one was comfortable before bedtime somewhere around midnight.

I dare say that this is a familiar day for countless interns; perhaps a light day for those in hospitals where there is more work to be done than possibly can be done by the available hands. Yet there is something fine about the internship, the overwork and the spirit that fosters medical ambition. It is likely to go on, making impossible in hospitals eight hour shifts and other labor union contrivances.

In spite of the illnesses to which interns and residents are liable and the hardships which they undergo yet the occupation of being on the resident staff of a hospital cannot be called a hazardous one. The department of statistics of the John Hancock Mutual Life Insurance Company informs me that, according to actuarial tables issued by life insurance examiners, $\frac{86}{100}$ of a group of men insured at the age of 25 should be alive four years later. Applying these figures to the 5,301 men who graduated from medical schools in 1937 and were written to and who probably averaged 25 years of age at that time, 5,122 should now be alive. Actually but 31 deaths have been reported.⁶ Even allowing for a considerable number of fatalities of which the American Medical Association has not been informed, these figures give a comfortable leeway of security in favor of the argument that the occupation of being an intern is not hazardous to life. The causes of the deaths which were encountered, however, are pathetic and of some interest.

Certainly infections took their toll, as did accidents, though how many of these accidents or infections could have been prevented is difficult

6. Dr. W. D. Cutter supplied this information.

to imagine. The not infrequent development of malignant disease, coronary disease and cerebral vascular disease in young persons always is impressive—again not preventable in the light of present knowledge. That depressions severe enough to end fatally can occur in a group of young physicians at the very outset of their careers is a sad commentary on modern life—a baffling puzzle before the medical profession that so far has proved unsolvable. On the whole, the few deaths which have been reported seem due to mischance rather than to any cause more easily defined. That they were uncommon and much fewer than might have been expected on a statistical basis is pleasing.

Certain general conclusions seem justified from this study. A long-continued institutional experience not only is popular but also desirable for the better education of doctors. Interns and residents receive a valuable educational experience from their hospital life and contribute largely also to the efficiency and reputation of whatever hospital they work in. Hospital life does not protect against illness, and in fact the occurrence of diseases such as appendicitis, pneumonia or tuberculosis appears to be more frequent among interns and residents than among a population less intimately associated with exposure to disease.

In the light of present knowledge, the illnesses that interns and residents are likely to acquire are not often strictly preventable. Interns and residents, however, should be given proper living quarters, adequate recreational facilities, good food, happy surroundings and some form of systematized medical supervision in order to protect their health reasonably and thus enable them to accomplish more. Hard work, alone, when the man is well fed, in cheerful surroundings and under proper conditions of living, is unlikely to be deleterious. There should be enough interns in each hospital, however, so that no one intern is grossly overworked. The amount of effort that an individual chooses to undertake in hospital life cannot well be limited. On the other hand, a friendly interest on the part of older members of the staff in the amount of work that each intern does and in his physical and mental adjustments to it may do much to prevent catastrophes.

The problem of tuberculosis is important enough to receive particular consideration. At best, to have tuberculosis is a time-consuming, unpleasant experience for any young person to contend with. Increasing numbers of medical schools are beginning to approach this problem seriously by the periodic examination of their student body. Hospitals, in contrast, are backward.

Each medical student on graduation from his medical school should receive a card giving a

complete report of his tuberculin test and roentgen examinations. Each hospital should make a rule to continue with this record by requiring chest films of its interns at six month intervals. Large hospitals dealing with vast numbers of patients should go even further. They should require their interns and residents to have chest films at three month intervals. If a rule of this sort were made general, tuberculosis in the resident staff would be recognized more quickly than it is at present, and unnecessary loss of time spent in treatment would be saved.

The health of doctors living in hospitals is an important matter. It deserves careful consideration.

ABSTRACT OF DISCUSSION

DR. HAVEN EMERSON, New York. Dr. Fitz speaks of 2,843 individuals; some of those, 807, had a one year experience, 905 had a two year experience and 1,131 had a three year experience. The total of that is six thousand and ten man years of exposure. What he is doing is to study the experience of young men of a certain age who have had six thousand and ten man years of exposure to a particular occupational condition. That is the basis on which the rates should be based, not on the basis of individuals, as if each individual in the series had exactly the same duration of exposure, which was not the case. Now, in the paper Dr. Fitz refers to the secluded, monastic life of these students, and then he tells us of sunburn from skiing, which isn't done on the hospital grounds, and poison ivy, which isn't found in hospitals, and then the occasional cases of tularemia which they get out shooting, not on the hospital grounds, and, besides that, four months off for pregnancy, which is not supposed to occur in a monastery. It seems to me these physicians are leading a very normal life; their morbidity experience is quite usual. Now it is important to realize what success Dr. Fitz had. If any of us should write to 5,300 persons and get 2,840 answers we would think we were very good correspondents. The persuasiveness of his postal cards and his friendly relation with these people is an important factor in the thoroughness of this study. He has had 55.6 per cent returns on the questionnaire, which is higher, I think, than would be expected and is an admirable sampling of the group he is studying. Of course, it is true that if 16 per cent were all that were not sick at three years one would expect 29 per cent not sick in two years and 49 per cent not sick in one year. When the medical officer of the army is faced with an epidemic, he overworks just like the intern, whereas the other army officers don't have any particularly added hazard; so I think it would be well in comparing resident interns or hospital residents with army officers to compare them with that fraction of army officers who are medical officers and thereby likely to be exposed to the same kind of epidemic and hospital exposure that hospital interns are exposed to. In times of epidemic prevalence of respiratory diseases, all hospitals are overcrowded, all doctors and nurses are overworked, loyalty tends to replace judgment, and interns and residents stay on the job longer than is good for them or for their patients. The annual death rate of this intern group is 5.66 per thousand. That is a rate that is not very far from the normal for this age and sex distribution. Their death rate is no different from the same age sex group in the community, but when one comes to appendicitis there is a difference. The appendicitis death rate per hun-

dred thousand of the general population has run from 14 down to about 11 or 10 in recent years. This intern group had a rate of 49.9, which is a tremendous death rate from appendicitis. There is an appendicitis incidence of 5.5 per cent of this total intern group. This demands explanation, and I hope Dr. Fitz won't drop it there but find out how many of these were unnecessary appendix operations and how many of them were really such as would occur in ordinary civil life in which the person had to count both the cost and the duration of interference with his work. I think it is of the greatest importance that we should have analyses of this kind, of persons with limited hazards for limited periods of time, so that we can show the extent of their medical risks.

DR. HAROLD S. DIEHL, Minneapolis: Most laymen and, I presume, physicians would accept it as axiomatic that health hazards in institutions dedicated to the restoration of health would be reduced to the minimum, and that the safeguarding of the health of the physicians and nurses living in these institutions would be one of their first concerns and responsibilities. Yet this survey shows that the life of interns is in some respects very unhygienic and that the incidence of certain serious infections among them is exceptionally high. The survey which Dr. Fitz has reported does not provide information concerning the acute minor illnesses among interns but it does show that appendicitis, pneumonia and tuberculosis occur with significant frequency. This agrees with our findings, that the leading causes of serious illness among 1,673 graduates from the University of Minnesota Medical School from 1909 to 1936 were pneumonia, tuberculosis, appendicitis and scarlet fever. It is tragic for 48 of the recent graduates of our medical schools to have contracted clinical tuberculosis during their internships, yet this is probably only the beginning of the story, because infections or reinfections with tuberculosis acquired during one's internship may result in the development of clinical disease which does not make an appearance for years afterward. In a study in which Dr. J. Arthur Myers and I collaborated we reported that 46 per cent of 65 young physicians who did not react to tuberculin on graduation from medical school became infected with tuberculosis, as evidenced by positive tuberculin reaction during their internships. This is a terrific rate of infection for a single

year. Among student nurses in a general hospital Dr. Ruth E. Boynton found that the annual infection rate for tuberculosis was a hundred times as high as among college of education students from the same campus.

Epidemiologic studies show that most of these infections are probably acquired from patients in the hospitals or clinics in which the interns and nurses are serving. To prevent both of these types of unrecognized exposure in our University Hospital we have instituted thorough periodic physical examinations of all hospital personnel and have made a fluoroscopic examination of the chest a part of the routine physical examination of all patients admitted to the University Hospital or its outpatient clinic. The analysis of the results of these examinations revealed that in the first three months period 12 patients who were admitted to the hospital for other conditions were diagnosed as having, in addition, active pulmonary tuberculosis, previously undiagnosed, but in a moderately or far advanced stage. All these patients were potentially infectious. Many young physicians who have devoted years of their lives to preparation for the practice of medicine are sacrificing their health in hospital services as interns, and this at a time when our nation needs to conserve and possibly even expand professional medical services in connection with the defense program. Hospital authorities who are unwilling to try to improve this situation reply that individuals who wish to become physicians must accept the risks inherent in their profession. No one will disagree with this. But it does not follow that these young physicians should be exposed to unnecessary hazards to health and even to life itself. On the contrary, hospitals have an inescapable responsibility to provide for their interns, residents and nurses the very best living conditions and health protection that modern scientific medicine can offer.

DR. REGINALD FITZ, Boston: I should like to call Dr. Emerson's attention to the fact that the ease of tularemia which occurred was not acquired in hunting but developed in line of regular hospital duty. Dr. Emerson has been most helpful in aiding me to prepare this contribution. I am flattered that two experts in public health would be willing to comment on this presentation. The health of interns can be studied later to better advantage and the problem is worth working at. This study, at least, is a beginning.

Digests and Reviews

A NEW INITIATE SPEAKS

Condensation of an address by Claude R. Hitchcock, delivered before the Theta Tau chapter of Phi Rho Sigma in accordance with the custom of having each initiate address the chapter at the first meeting following initiation.

In our generation all aspects of civilization are being subjected to the severest test they have ever had to endure. The philosophies for which the contestants in the present world conflict are fighting go deep into the core of man's existence.

There is no way, except by conjecture, to ascertain the lengths to which nations will be driven before the last chapters of the present catastrophe are closed. Here in the United States we have already started on a ruinous course of overexpansion of industry, excessive spending of monies and regimentation of man power that will have drastic repercussions when

we are again favored with peace. While the nature of our trials to come depends on the outcome of the present war, of greater significance is the fact that we are going to be beset in either case by problems that will tax the last ounce of strength in our democratic system.

There has already been started an undercurrent of thought and of movements that would place American institutions on a basis of socialism. When this happens, the medical profession will find itself included in the new socialistic order. From that day on the value of the members of the profession to their fellow men is going to decrease. The great advances in medicine have come in those countries where men have been free. Wherever socialization and regimentation of medicine have occurred, the fine spirit of the members of the profession has been dulled. To take from these men their

independence and to place them in a stratified society of workers is to take from them the innate desire to better their services to humanity.

If we passively accept the dictates of political schemers and close our eyes to the need of closer cooperation and to the need of better control and distribution of medical services by the members of the profession themselves, we shall no longer find our profession the inspiring challenge that it now is. We must take the initiative in any case in which the interests of the profession are endangered. We must pioneer a movement within the medical circle itself to bring to all members of this country, rich and poor, the adequate medical service that is within the power of the profession to provide. Only by removing all sources of criticism of the practice of medicine today shall we be able to keep the practice of our profession under our own control and thus maintain the high standards of service and advancement that have been the pride of the profession in the past.

With this in mind, we, as medical students, have a solemn responsibility above that which was borne by the men of medicine in the past. We not only must maintain our medical art on the high plane on which they bequeathed it to us, but we must further the unification of the profession to a degree never yet attained. We must begin now to make ourselves strong; strong not only in our comprehension of the purely medical aspects of the profession but strong in our knowledge of the relationship of medicine to the structure of society as a whole and strong in our convictions of the true and proper course that we must follow to realize our present ideals.

THE FUNDAMENTAL SCIENCES

Abstract of Lecture by Dr. Anton J. Carlson, of the University of Chicago, at the fiftieth anniversary of the founding of the University of Minnesota Medical School, published in the Minnesota Alumni Weekly, Jan. 27, 1940.

The earliest accounts we have of man trying to understand himself and the universe deal with astronomy and with human sickness. The earliest, sporadic achievements in medicine, such as the use of quinine against malaria by the South American Indians and vaccination against smallpox by the Chinese several hundred years before Jenner, were steps in the control of, rather than in the understanding of, disease. Galen was on the right road, but he had few real followers for a thousand years. Hence, medicine in the sense of discovering the causes of human ills dates back only a few hundred years. And the achievements in medicine closely parallel the progress in the fundamental sciences of biology, chemistry and physics. The reason is that biology, chemistry and physics have

furnished many of the data, the hypotheses and the tools necessary for the next step in the fight against disease.

Human anatomy, animal physiology, biochemistry, bacteriology and pharmacology are historically the legitimate offspring of medicine. Perhaps it would be more correct to call biochemistry an adopted child—adopted from chemistry. They are now an integral part of modern medical education, medical practice, medical research and hence included in the term medicine. But physiology, at least, is as important in our secondary and college education as it is in medical education. Education means understanding. Health education means understanding the living body, the living machinery of man, the known causes of disease or ill health and the known ways of keeping fit. This is the contribution of the medical sciences to primary and general education in our democracy.

What about botany and zoology? In the first place, the plant groups bacteria and fungi are common agents of human disease. But, more fundamental still, the essential machinery of reproduction, growth, nutrition, respiration, heredity and death is the same in the plant and in man. The plant is subject to disease and death, much as man, from defective heredity, malnutrition, poisons, bacteria, animal parasites and viruses. Plants take up from the soil and concentrate in their seed and other structures substances toxic to man, such as selenium and fluorine. Man secures much of his food from the plant kingdom, and the quality of that food is of great significance to human health. Medicines such as quinine, ephedrine and digitalis are manufactured by plants. But perhaps it is in the studies in cell life, on the machinery of heredity and on the mechanisms of immunity to disease in plants that botany attains its greatest significance to human medicine. So the botanist is to the physician a fellow worker.

We have been puzzled by the seemingly abrupt and adult appearance of the hormone machinery, specifically beginning with the vertebrates. The riddle has been solved in the last ten years by the plant physiologists. Many of these hormones are present in the tissues of the plant. In the vertebrates their production has become confined to specific organs or glands. It is no longer so perplexing to find that the pussy willow produces chemical messengers not so different from those produced by the ovaries of women and the testes of men.

Man can get tuberculosis and undulant fever from the cow and the goat, trichinosis from the hog, glanders from the horse, Asiatic plague from the gopher and the rat, tularemia from the rabbit, tapeworm from the fish, spotted fever from the wood tick, malaria and yellow fever

from the mosquito, typhus from the louse and psittacosis from the parrot, and this is not the end of the list. Man is an animal. Some people believe, others hope, he is also something more. There may be uncertainty as to facts in biologic evolution, but the essential identity of the brain, the heart, the intestine, the lungs, the liver and the kidneys of man and the animals is certain.

Unfortunately we do not transmit our own understanding and knowledge with our germ plasm. We can give our children only the capacity and the facilities to learn. No matter how great our medical knowledge today, our children of tomorrow start at zero. So each generation of medical students must secure its fundamental training in the nature of health and the nature and control of disease on the animal, living and dead. The fundamental experiment of the immortal Pasteur was on sheep. Some human ailments cannot at present be diagnosed with certainty without resorting to tests on living animals. The mouse and the rat, the guinea pig and the monkey are necessary material in the modern medical school, the modern hospital, the modern medical research institute.

Preventive medicine is the natural child of fundamental medical research and social statesmanship. Some progress is being made with smallpox, typhoid, malaria, tuberculosis, syphilis and dietary deficiencies, but the perplexities confronting the students of nationwide disease prevention today seem as discouraging as did the control of individual sickness to the doctor of a hundred years ago. Ignorance, irresponsibility, poverty and greed are formidable obstacles to the health of the individual. Nationwide these seem insurmountable except to the few of us who may be killed but never conquered. This program involves a high level of education and sense of social responsibility on the part of every citizen. It involves adequate food production (hence agriculture) and distribution (hence commerce), adequate housing, adequate work for all who can and will strive, and the sterilization of those who cannot and will not do their share of the world's labor.

CHEMISTRY

The same chemical substances and chemical energies operate in man and in the rest of the universe. We owe to chemistry many of the methods necessary in the isolation, analysis and comprehension of the processes of health as well as of disease in the identification of chemicals that cause disease, in the manufacture and purification of chemicals that aid both in the prevention and in the cure of disease. The microscope revealed the cell as the present unit of life, but it remained for chemistry to reveal its composition and its energies. Picture where the physician and his patient would be without our present knowledge of the chemistry of

respiration, of foods and digestion, of blood and urine, of growth, of hormones, of bacterial toxins and immune bodies, of such important remedies as insulin, arsphenamine, sulfanilamide and vitamins.

PHYSICS

The line separating chemistry from physics is faint. These two sciences unite in probing the atom, in harnessing the electron, and every chemical change has physical concomitants. The human eye, the human ear are in fact physical machines, worked by the physical forces of light and sound. The discovery of electrical energy did more for biology and medicine than it did for industry. The roentgen ray is nearly essential in the diagnosis of gastric ulcer, tuberculosis, tumors, rickets, brain abnormalities, diseases of the gallbladder, the kidneys, the heart and the blood vessels. A physicist told me that in his opinion all physicists should abandon research in pure physics and for the next generation focus their brains on biology and medicine. That would be a mistake. Let a Compton and a Millikan continue to capture the elusive cosmic ray. In the long run that will be of greater service to medicine than if such men, almost innocent of biology, should turn their attention to cancer. We need more brains in every science.

But the chemist and the physicist have an easier task than the physician. In their dealings they are the least hampered by the human equations of ignorance, superstitions and misunderstandings of his fellow man. Not so the doctor. Medical education and medical research are becoming increasingly complex, time consuming and costly. The conscientious practice of modern medicine is becoming so complicated and costly as almost to exceed the intellectual capacity of the ablest men. I see no cure for this. No university will be able to maintain a medical school of distinction without great men also in biology, chemistry and physics.

FIRST RATE MEN

I would put first things first in this field, and that is able men. I have listened to endless discussions on the medical curriculum. I have seen drives for bigger and better teaching and research hospitals, bigger and better teaching and research laboratories. I have listened to plans for "coordination of research" from people who do not have their milk teeth of research. Talk comes easy. But real medical research and conscientious medical practice take everything that the ablest of us can deliver. It is not a schedule of forty hours a week but a sweating proposition of eighteen hours a day. Look at the piles of brick, steel and stone towering on almost every college campus the last ten years, largely through federal funds. How many farthings have been invested in men in these institutions, in first rate men? Big

buildings and small men have never made great institutions. But big men have frequently added mightily to our understanding of life in health and in disease, in primitive surroundings and with meager equipment.

DEDICATION OF THE YALE MEDICAL LIBRARY

The new medical library of Yale University Medical School, New Haven, Conn., was formally dedicated on June 15. The dedicatory address was delivered by Dr. John Homans, former member of the Yale University Medical School faculty and now clinical professor of surgery at Harvard Medical School, Boston. The opening of this library, Dr. Homans said, commemorates the gift to the Yale School of Medicine of the late Dr. Harvey Cushing's great historical collection. The collection and study of books was a fascinating avocation to Dr. Cushing into which he put as much time as could be spared. This interest was aroused in part by Dr. Cushing's early association with William Osler and in part by a gift by W. G. MacCallum of a 1543 copy of *Fabrica* of Vesalius and by another 1555 edition presented to him by Howard A. Kelly. For years Dr. Cushing kept behind his desk a small case in which he put books that he referred to as "science firsts." While cataloguing these books at odd moments, the idea came to him of writing to the men who had or were making great contributions to science to ask for reprints of their publications. He first wrote to the list of Nobel prize winners and then used his judgment to select the younger men who he thought some day might belong to that group or a similar one. Many of these contributions are now in the Yale Library, and some day Cushing's correspondence in these matters will make a fascinating record. Dr. Homans said that Cushing often had great ideas but he did not readily transmit them to his associates. He found it difficult to delegate to others the working out of a plan, and he could not shake off routine. He paid meticulous attention to details in even the final stages of surgical operations and to prolonged examinations and the dressing of patients. He held himself to a high standard in everything he did. He even wrote in longhand at first and then by corrections and insertions and transpositions in the typewritten manuscript, producing in his characteristic graceful handwriting an unforgettable manuscript. One of his most brilliant

essays was "The Doctor and His Books," which was delivered at Cleveland. Cushing was primarily an artist, imaginative, creative, energetic and determined. Few writers attain so consistent a standard of charm in style and expression, although at times he would produce labored sentences. Cushing was at his best when writing of books or of romantic episodes or of beloved and admired friends. The remainder of Dr. Homans' address pertained to several of the larger medical libraries of this country. As a memorial the class of 1891 presented the rotunda, which Dr. Starling W. Childs in his presentation speech said is a fitting monument to Dr. Cushing for it is the center of the medical library and is a symbol of his life, character and medical career. The library and the rotunda and other gifts of endowment and equipment were accepted by the president, Charles E. Seymour of Yale University, who gave them over into the hands of the dean of the school of medicine, whom he charged with their care. Dr. Francis G. Blake, dean of the medical school, accepted the library and its many treasures for the school of medicine. In this building, he said, in almost unique proximity, are now assembled exceptional collections of the classics of medicine and also ever growing collections of books and journals which give expression to the truths and fancies of medicine of today, which perchance may become classics of a more enlightened future. Harvey Cushing, he said, was the moving force in launching the plans which had now come to fruition. Cushing's conception of the proper influence of a library was in part expressed as follows: "To quicken the dormant book so that it may speak again; and with those who treat it lovingly and compassionately its spirit enters eagerly into communion. To these a library becomes a laboratory for the crystallization of ideas perhaps long expressed, out of which process new ideas have their birth." The master of ceremonies, Wilmarth S. Lewis, chairman of the Yale Corporation's Committee on the Library and Museums, told of the development of the idea of "The Institute," which was to be the libraries of Drs. Cushing, Klebs and Fulton, which they would give if the university would put up a building for them. Just before Dr. Cushing's last illness, Mr. Lewis was able to tell him that all plans had been made and that ground shortly would be broken for "The Institute."

DO YOU KNOW WHAT PHYSICIAN—

1. Was the first physician to practice inoculation for the prevention of smallpox in America?

2. Was the first to introduce into the United States vaccination for the prevention of smallpox?
(The answers are on page 1136)

Medical College News

Medical schools, hospitals and individuals will confer a favor by sending to these headquarters original contributions, reviews and news items for consideration for publication in the Student Section.

Illinois to Remain Open Twelve Months a Year

The board of trustees of the University of Illinois has approved the operation of the medical school of the university twelve months out of the year. Heretofore, the medical school has been operating on an academic year of nine and one-half months. The trustees also authorized an increase in the freshman medical class from one hundred and fifty-five to one hundred and sixty-five students, and in the junior class from one hundred and forty-nine to one hundred and sixty-five, by acceptance of sixteen transfer students. Next year, it is reported, summer classes will be provided for fourth year medical students.

Wayne Admits Ten Additional Freshmen

Because of defense needs, Wayne University College of Medicine, Detroit, has made special arrangements to accommodate ten more medical students than customarily are admitted each September. The Welcome Day program, September 10, for the largest freshman class in seven years was in charge of the medical college student council. The program was arranged by the council president James Doty. After the program, the new class made a tour of the college buildings and visited the hospitals and the board of health laboratories.

California Students to Be Offered Influenza Vaccine

Last year influenza was the cause of more hospitalization among University of California students than any other factor. This year Dr. William G. Donald, university physician, announces that one thousand students will receive influenza vaccine in the hope that it will reduce the incidence of influenza among the students. The vaccine, which was given to the university by the research laboratory of the state department of health, was developed by the laboratory of the International Health Division of the Rockefeller Foundation. Type A vaccine will be administered, as that was the type of influenza prevalent last year among the students.

Three Students Win Harvard's National Scholarships

The three outstanding candidates for admission to Harvard Medical School this fall as recipients of national scholarships offered by the school are Gaston E. Blom of Tuckahoe, N. Y. (A.B. Colgate University '41); William F. Ketchum of Evanston, Ill. (A.B. Harvard '41), and Frederick R. Gilmore of Bloomsburg, Pa. (A.B. Lehigh University '41). Winners of these scholarships who maintain honor records continue to hold the awards until graduation. This is the fifth year of Harvard Medical School's national scholarship plan, which was introduced by President Conant in Harvard College in 1934 and subsequently has been adopted by some of the other Harvard schools.

In addition, Harvard Medical School has awarded scholarships and fellowships for the next academic year totaling \$6,860, to Harold D. Rosenbaum of Fair Play, Ky.; Carl T. Nelson '42 of Jamaica Plain, Mass.; William E. Watts '42 of Seattle; Victor C. Vaughan III '43, Richmond, Va.; Israel H. Scheinberg '44, New York; Eugene R. Sullivan, M.D., assistant in medicine, Massachusetts General Hospital, Boston; Walter E. Knox III, '43, McCook, Neb.; William F. Pollock '44,

Santa Monica, Calif.; Hebert R. Morgan '42, Bell, Calif.; Stuart G. Quan, Oakland, Calif.; Henry S. Fuller, Washington, D. C., and Ping-Yang Liu, M.D., research fellow at Harvard Medical School.

Maryland Graduates Inaugurate Fund for Needy Students

Each member of the 1941 graduating class of the University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, gave \$1 on graduation and promised to give \$1 a year thereafter to support alumni scholarships to aid needy medical students. In fulfillment of the promise, ninety-two members of the last graduating class gave \$126 to the treasurer of the alumni association. The announcement was made at the alumni banquet by John E. Esnard, president of the graduating class. Dr. Charles Bagley Jr., then president of the alumni association, announced that the other classes in the medical school were planning to make this action of the class of 1941 a tradition.

Indiana Adds Twenty-Five Acres to Campus

The extent of the campus of the Indiana University Medical Center, Indianapolis, was increased from fifty to seventy-five acres June 26 by the purchase of land and a trade with the Board of Park Commissioners of Indianapolis. The Riley Memorial Association acquired eighteen acres northwest of the Convalescent Home of Riley Hospital and five acres in front of the main hospital building from the city park department in an exchange for lots in another part of the city which had been bequeathed to the Riley Hospital by the late Edmund Zoller. In addition to this, Riley Association bought twenty-three lots from private owners. The expansion of the campus will give the medical center protection against encroachments and provide ultimately for the erection of a research building. For the present, the new lands will be cleared and landscaped. The opportunity to acquire the land was made possible by the contributions of philanthropic citizens who had contributed to the medical center.

The Schering Award

The Association of Medical Students is sponsoring a scholarship competition among medical students for the best dissertations on the history of endocrine research. Full scholarships of one year and one-half year will be awarded. The scholarships have been donated by the Schering Corporation to the Association of Medical Students in order to encourage interest in endocrinologic developments. Any medical student matriculated in a medical school in the United States or Canada is eligible to compete. Graduate students are not eligible. Senior medical students are eligible with the understanding that they will be awarded, if successful, an equivalent scholarship for graduate study or the cash equivalent of the scholarship, at the option of the medical student. A student may submit as many manuscripts as he desires, typewritten and double spaced on one side of the paper only and varying from 5,000 to 10,000 words, although this restriction is not absolute. The material presented should be completely and properly documented by reference to the literature. Manuscripts will be received up to Nov. 15, 1941.

The successful candidates will be announced in December, at which time the prizes will be awarded. Manuscripts, notices of intention to participate and other communications should be addressed to the Committee on the Schering Award, Association of Medical Students, 25 Madison Square North, New York. The judges will be:

- H. M. Evans, professor of anatomy and biology, Institute of Experimental Biology, University of California.
- E. C. Hamblen, associate professor and chief of the Endocrine Division, Department of Obstetrics and Gynecology, Duke University School of Medicine.
- R. G. Hoskins, director of the Memorial Foundation for Neuro-Endocrine Research, Harvard Medical School, and editor emeritus of *Endocrinology* and of the *Journal of Clinical Endocrinology*, official organs of the Association for the Study of Internal Secretions.
- F. C. Koeh, chairman of the department of biochemistry, University of Chicago.
- Hans Lissner, clinical professor of medicine, University of California Medical School.
- E. P. McCullagh, of the section on endocrinology and metabolism, the Cleveland Clinic.
- C. R. Moore, professor of zoology, department of zoology, University of Chicago.
- Emil Novak, associate professor of obstetrics, University of Maryland School of Medicine and College of Physicians and Surgeons.
- E. L. Sevringhaus, professor of medicine, University of Wisconsin Medical School.
- Ephraim Shorr, assistant professor of medicine, Cornell University Medical College and the New York Hospital.

Louisiana's Bel Award

The dean of Louisiana State University School of Medicine, New Orleans, Dr. Beryl I. Burns, announced that Dr. Spurgeon M. Wingo, who graduated on June 2, received the George S. Bel Memorial Award of \$50, which is presented annually to the fourth year student who symbolizes the highest ideals of medicine as demonstrated by "scientific interest, ethics, personality, tact, bedside manner, ability to handle people, kindness to patients, clinical ability, and an aim to serve humanity rather than mercenary ambitions." The winning student is selected from the highest ranking fourth year students by a faculty committee. Dr. Wingo will serve his internship in the U. S. Marine Hospital at New Orleans.

College of Medical Evangelists

At the College of Medical Evangelists, Los Angeles, May 4, the sophomore class was host at a homecoming at the Loma Linda division in honor of the junior and senior classes which included a field day of sport events, a picnic supper and a program in the open air amphitheater. The annual picnic of the alumni of the school was held May 11. Prizes were offered to the participants in the sport events and contests. Concerts were given again this year by the Bards, a male chorus consisting largely of medical students and interns under the direction of Dr. Clemen Hamer. At a recent meeting of the board of trustees, plans were laid for the erection of a new dormitory to house the freshman and sophomore men at the preclinical division at Loma Linda.

Georgia Classroom Buildings to Be Enlarged

The board of regents of the University of Georgia announced in August that it would receive bids, September 8, for the enlargement of the classroom buildings at the School of Medicine at Augusta and that the buildings then would accommodate an increase of 50 per cent in the student body. The present classroom facilities will accommodate only fifty-one freshmen students. The estimated cost of this work together with other equipment would be \$165,000.

Wayne University's Annual Awards

At the annual banquet of students and faculty at Wayne University College of Medicine, Detroit, May 24, Dr. Ralph M. Waters, professor of anesthesia at the University of Wisconsin Medical School, Madison, gave an address on the history of anesthesia. The following awards were presented: Alumni Senior Scholarship Award of \$50 to Charles E. Stebbins '42; Student Merit Award to Mark Dale; Distinguished Service Medal to Dr. Frederick F. Yonkman, professor of pharmacology and therapeutics, and a gold watch presented by faculty members to retiring professor of pathology Dr. James E. Davis.

The glee club of the college of medicine presented its first public concert, May 23, to a large audience. Mr. Leroy W. Jahnke will continue as director of the club.

At the student-faculty convocation, May 23, Mr. James R. Doty '42, president-elect of the Student Council, presented to the dean on behalf of the Student Council oil portraits of the following pioneers in medical education at Wayne University: Drs. A. P. Biddle, W. H. MacCracken, W. J. Stapleton, William Donald and Burt R. Shurly. The artist was Mr. Leon A. Makielski.

Prizes Awarded to Long Island Seniors

At the commencement day exercises at the Long Island College of Medicine, Brooklyn, June 5, at the Brooklyn Academy of Music, the address was delivered by Harry D. Gideonse, president of Brooklyn College; the administration of the Hippocratic Oath was by Dr. Alfred E. Shipley, professor of preventive medicine; the presentation of candidates by Dr. Jean Alonzo Curran, dean, and the degrees were conferred by Dr. Frank L. Babbott, president of the college.

Prizes and medals were awarded to the following members of the graduating class:

Joseph David Feldman, the Dudley Medal, for the best clinical report of a case in the medical wards of the Long Island College Hospital.

James T. Smith, the Dudley Memorial Medal, for the best clinical report of a case in the surgical wards of the Long Island College Hospital.

Thomas G. Morrione, the Mitchell Prize, to the graduate who in the judgment of the faculty is best qualified in all departments of medicine.

Mary-Light Schaeffer Cassidy, the Ford Prize, for the best dissertation.

Thomas J. Dunne, the Obstetric Prize, for the best thesis on an obstetric subject.

Regina V. Gilroy, the 1898 Class Prize, to the student whose scholastic average in the fourth year showed the greatest improvement over that of previous years.

Arthur G. Hopkins, the Alumni Prize, to the student best qualified in gynecology.

Intramural Contests at Tennessee

The end of the annual series of intramural contests at the University of Tennessee, Memphis, was marked by the presentation ceremony at the University Center, May 9. Trophies were awarded to the winning groups of students and awards were made to the retiring intramural managers and student body officers. Earl Best, Knoxville, Tenn., sophomore in the school of medicine, is president of the student body for 1941-1942.

Annual Banquet at Indiana

Dr. Chester A. Stayton, Indianapolis, addressed the annual banquet of the Phi Beta Pi medical fraternity at the Indiana University School of Medicine, Indianapolis, April 9, on "Choosing Medicine as a Career"; Dr. Lewis C. Robbins, Bloomington, discussed "Non-medical Activities," and Dr. William V. Woods, Indianapolis, spoke on "Choosing a Medical Fraternity."

Premedical News

Alpha Epsilon Delta, honorary fraternity for pre-medical students, has thirty-one chapters in colleges and universities throughout the country, the newest chapter having been inaugurated March 8 at the University of Detroit with twenty charter members. The Ohio State University College of Medicine, Columbus, Alpha chapter, was addressed May 9 by Dr. Walter Reekless of the department of sociology on the relation of criminology to the problems of medicine and on April 24 by Dr. Jack Harris of the department of sociology on the relation of anthropologic studies to medicine. The chapter awarded a \$50 prize for the winning paper in the fraternity essay contest at the June commencement; the prize was awarded by the president of the university. Members of the Missouri Alpha chapter have been constructing in their spare time for the last two years a club cabin on Brockman's Lake, near Fayette, and expect to have the cabin completed and ready for meetings and week-end outings next year. The Oklahoma Alpha chapter will present an award of \$50 to the outstanding premedical student who will enter medical school next fall. The award will be based on scholarship and leadership. The members of the California Alpha chapter visited the Children's Hospital in Los Angeles recently, where they observed a demonstration on the electroencephalograph, an instrument used in the diagnosis of brain tumors.

Virginia

Dr. Fuller Albright, Boston, recently delivered the Brown-Séquard address at the Medical College of Virginia under the auspices of Alpha Omega Alpha.—Dr. Eugene M. Landis, Charlottesville, lectured on "Capillary Physiology and Fluid Balance" as the guest of Sigma Zeta.—Phi Beta Pi sponsored a lecture by Dr. Walter E. Vest, Huntington, W. Va., on "Some Medical Aspects of Shakespeare."—Drs. Walter Freeman and James W. Watts, Washington, D. C., discussed "Prefrontal Lobotomy in Mental Disorders" before the University of Virginia Medical Society, Charlottesville.

Arkansas

The newly elected officers of the student body of the University of Arkansas Medical School, Little Rock, are Peter O. Thomas, Little Rock, president; Joseph W. Ledbetter, Jonesboro, vice president; Robert W. Ross, Little Rock, Secretary; Arnold H. Gould, Bloomfield, N. J., treasurer. All of the new student officers will be seniors next year.

Lecture on Medical Ethics

The sophomore class of the University of Alabama School of Medicine, University, Ala., was addressed by Dr. Seale Harris Jr., Birmingham, on medical ethics. Dr. Harris also distributed to the members of the class the code of ethics of the American Medical Association.

Phi Rho Sigma

Delegates from all chapters of the Phi Rho Sigma medical fraternity held their annual four-day convention at Lake Wawasee, Ind., in June. Dr. Stuart Wilson, Detroit, past president of the fraternity, delivered the keynote address; much time was given to consideration of the role of the medical student in the national defense program. Dr. Jonathan Forman, Columbus, Ohio, was reelected president; Dr. Norman M. Macneill, Philadelphia, vice president; Dr. Ralph W. Elliott, Cleveland, reelected secretary-treasurer.

Four Year Course in Pharmacy

The University of Illinois College of Pharmacy announced, July 18, the establishment of a four year course in pharmacy, supplanting a three year course which had to be preceded by one year of college work. Henceforth, students may be admitted directly from high school. In the final two years of the four year course there will be five fields of specialization offered: retail pharmacy, hospital pharmacy, pharmaceutical chemistry, pharmacology, and food and drugs. The College of Pharmacy begins its eighty-second year this fall, having been founded in 1859 as the first school of pharmacy west of the Alleghenies. It became part of the University of Illinois in 1896.

National Board Questions in Biochemistry

Following are the questions used by the National Board of Medical Examiners in Biochemistry in part I of the examination held February 12-14: (Part I of the examination is given at the end of the first two years of the medical curriculum.)

Answer any five questions. Wherever possible, give formulas for the compounds discussed:

1. The pH of the blood is normally maintained within a narrow range while that of the urine varies considerably. Explain.
2. Discuss briefly the ultimate fate of any three of the following substances in the normal human subject: (a) lactic acid, (b) alanine, (c) benzoic acid, (d) nucleic acid.
3. What is meant by "nonprotein respiratory quotient?" What information may be obtained from it?
4. Discuss the chemistry and the nutritional value of milk.
5. Name and give the origin of the sulfur-containing compounds found in urine. To what extent may the composition of the diet influence both the amount of these urinary sulfur compounds and their percentage distribution?
6. Define a lipid. Name two important phospholipids and discuss the chemistry and probable function of each.
7. Discuss the functions and the daily human requirements of two of the following elements: sodium, potassium, iron, iodine.

"DO YOU KNOW WHAT PHYSICIAN"

Following are answers to the questions appearing on page 1133:

1. Zabdiel Boylston (1679-1766). Dr. Boylston was the son of Dr. Thomas Boylston of Muddy River, which is now Brookline, Mass. According to Fielding H. Garrison in his "History of Medicine," Dr. Boylston during the sixth epidemic of smallpox in Boston inoculated his own son and 2 Negro slaves and before the epidemic closed had inoculated 244 persons, exciting great opposition and threats of hanging. Dr. Boylston spent two years in London, where he lectured to the Royal Society of Physicians and was elected a fellow of the Royal Society in 1726. Among other publications he made a joint contribution with Rev. Cotton Mather in 1721 entitled "An Historical Account of the Smallpox Inoculated in New England."

2. Dr. Benjamin Waterhouse (1754-1846), who went to England in 1775 and studied with Dr. Fothergill and later went to Edinburgh for lectures and hospital experience. He studied at the University of Leyden for four years, taking a degree in 1781, and in 1782 began the practice of medicine in the United States. He was the first professor of theory and practice at Harvard Medical School, Boston. In 1799 he received from London a copy of Edward Jenner's "Inquiry into the Causes and Effects of the Variolae Vaccinae or Smallpox," and on July 8, 1800 vaccinated his own son and later vaccinated other members of the family. These persons later were inoculated with variolous matter by another physician in Brookline, and none of those inoculated contracted smallpox. At Dr. Waterhouse's suggestion a public experiment was undertaken in East Boston in which children were first vaccinated and later inoculated for smallpox, and this experiment proved conclusively that cowpox is a complete security against smallpox.

Book Notices

Research—A National Resource. II.—Industrial Research. December 1940. Report of the National Research Council to the National Resources Planning Board. Paper. Price, \$1. Pp. 369, with 101 illustrations. Washington, D. C.: Supt. of Doc., Government Printing Office, 1941.

This report is a thrilling mystery story of how scientists unmasked saboteurs of progress and uncovered the secrets of materials, forces and personnel that blocked industrial advance. The first research scientists were often "amateurs," "gentlemen of leisure" or university professors usually interested in "pure" science. High rewards for successful discoveries caused investigators to multiply, until in 1940 2,330 companies "reported 70,033 persons engaged in technical research in the United States," an increase of 41 per cent since 1938. There was a sharp decline in industrial research departments in industry from 1929 to 1932. There are some indications that research, especially for all but the industrial giants, is returning to educational and technical institutions, which always are the main source of research personnel. When industrialists as well as chemists, physicists and physicians find ways to use the results of research in atomic disintegration, the distinction between "pure" and "applied" science disappears. Leading scientists tell in this report how governments, universities, industries, laboratories, associations, academics and a multitude of scientific organizations and publications are exploring the frontiers of knowledge and classifying, organizing, synthesizing and redistributing the new found facts for researchers. There is the story of how the utilization of discoveries is transforming human lives, of how scientific progress is dependent on freedom and withers under totalitarian tyranny, and how the future of the world may depend on the use of research in war.

The Political Life of the American Medical Association. By Oliver Garceau. Harvard Political Studies. Cloth. Price, \$2.50. Pp. 186. Cambridge: Harvard University Press; London, Oxford University Press, 1941.

Mr. Garceau is apparently a naive young man in the Department of Government of Harvard University. The volume here reviewed was published with the aid of the Louis Adams Frothingham Fund as one of a series of Harvard Political Studies. A list of acknowledgments indicates that the author was advised by Dr. Hugh Cabot and by his late uncle Dr. John Lovett Morse, neither of whom, on the basis of their intimate experience, could speak with any authority on the internal affairs of the organization concerned. Mr. Garceau seems to have been somewhat helped by correspondence with a few secretaries of state and county societies and with the Secretary of the American Medical Association. There is not the slightest evidence that he made any attempt at any time actually to visit a session of the House of Delegates or the headquarters of the American Medical Association or to confer personally with any officials of the organization or employees who could have enlightened him about many matters which are obviously to him quite obscure and about which he is exceedingly confused. He has had some contact with printed proceedings and with THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and he seems on occasion even to have been unable to read accurately or to interpret correctly what he read. With these gentle comments it remains only to say that he endeavors to portray a picture of the organization, to find in its constituency an active minority, to determine the significance of recent debates having to do with social and socialized medicine. He concludes after a completely inadequate examination of but a small portion of the available evidence that the American Medical Association owes to itself and to the public a better performance than it has recently achieved. He seems to think that the internal politics of the Association are at fault and that a two party system in the House of Delegates would help to solve some of the problems. His final chapter, on "Political Ecology," is the most confused of all the chapters in the book. Obviously Mr. Garceau, with the inadequate survey that he has made of the situation, blows hot and cold alternately and with a considerable amount of dysrhythmia. To those who have worked in the public affairs of medicine there is much in the book that is interesting, but it throws on the situation that

it tries to portray only a blurred and vague illumination. It is difficult to understand why a university department and a university press should lend authenticity to such a volume unless the young man requires a book to his name as a step in the orderly processes of university promotion.

Die Kapillare Angioarchitektur der isogenetischen Grosshirnrinde des erwachsenen Menschen: Morphologische und quantitative Beziehungen zwischen Anglo-, Zyto- und Myeloarchitektonik sowie einige pathologische Aspekte. Von Ake G. H. Lindgren, M.D., Dozent der pathologischen Anatomie am Karolinschen Institut zu Stockholm. Paper. Pp. 101, with 16 illustrations. Helsingfors: Mercators Tryckeri, 1940.

This is a German translation of a monographic study by a Swedish pathologist. It embodies the results of a thorough investigation of the capillary bed of forty-four cortical areas (thirteen of the frontal lobe, four of the insula, three of the occipital lobe, eight of the parietal lobe, ten of the temporal lobe and six of the lobus limbicus superior). The study, thus, represents the most ambitious attempt to date of mapping out the distribution pattern and relative richness of cortical capillaries through the entire depth of the gray matter in the major portions of the isocortex. To the reviewer's knowledge, complete brain maps of the lateral and sagittal aspects are illustrated for the first time in which the various degrees of differentiation of the capillary pattern are shown, similar to the usual brain maps which emphasize differences in cytoarchitecture. For each chosen area comparisons were made between the capillary angioarchitecture on the one hand and the corresponding cytoarchitecture (after von Economo) and myeloarchitecture (after C. and O. Vogt) on the other hand. Valuable tables are given showing the relative amount of capillaries present in the various laminas of gray matter of all cortical areas studied.

The material consisted of 6 hyperemic human brains, of which thousands of sections perpendicular to the gyri of areas under consideration were made. For the final analysis, however, sections of only 3 of these brains were used, as their capillary system revealed the fullest possible degree of filling with its own blood. The author is skeptical as to the value of artificial injection methods and emphasizes his thesis that "blood (under hyperemic conditions) is the best injection medium." A modified Sjöstrand technic was used for staining the erythrocytes in the capillaries. This is essentially a benzidine-hydrogen peroxide stain. Alternate frozen sections were made of 200 microns for erythrocyte staining and of 25 microns for toluidin staining of neurostructures in strictly comparable fields. The detail technic for establishing capillary length in centimeters per cubic millimeter of gray matter is too involved to be reviewed here. The reviewer has checked calculations and figures given by the author and found the mathematical procedures correct. Throughout the study of the monograph respect for the great amount of work and the careful methods employed by the author is maintained. The author's criticism of conclusions drawn by R. A. Pfeifer is often sharp, although he recognizes the latter generously as the master of the injection method. Likewise, certain basic calculations by von Economo and Koskinas pertaining to the number of neurons in a given unit of gray matter are questioned by the author and evidently justifiably corrected. As a measure for the relative richness in capillaries in proportion to the number of cell bodies in the various cortical laminas the author established an index.

Differences in the capillary angioarchitecture of various cortical areas are usually less than those existing in the cytoarchitecture and myeloarchitecture. Broadly, there is a certain degree of parallelism in the degree of differentiation and detail arrangements (architectonics) between all three elements of cortical structure, although there are many exceptions. The author agrees with Lorente de Nó, Holmes and others that a particularly rich relative amount of capillaries present in a particular lamina (for instance the first) may be related to a great number of synapses occurring at such a level rather than to the presence of particularly numerous neuron cell bodies.

Relatively richest in capillaries, as compared to cell content, is the first lamina. Second place in relative richness of the capillary bed is taken by lamina 6b. Fairly constantly the fourth and second laminas are in the last position in their richness of capillaries relative to their cell content. This is undoubtedly due to the extraordinarily high cell content of

the outer and inner granular layers even though the absolute capillary supply of the fourth lamina is rather high. In their relative capillary content the remaining laminas occupy an intermediate position between the extremes mentioned.

The author's remarks concerning the practical applications and possible significance in pathology are brief. The literature is adequately reviewed, but fortunately the bulk of this monographic study is concerned with original observations. It is only to be regretted that the little book is not as well illustrated as, for instance, R. A. Pfeifer's similar study of the angioarchitecture of the cortex of the cat. There are sixty bibliographic references.

Synopsis of Diseases of the Heart and Arteries. By George R. Herrmann, M.S., M.D., Ph.D., Professor of Medicine, University of Texas, Galveston. Second edition. Fabrikoid. Price, \$5. Pp. 468, with 91 illustrations. St. Louis: C. V. Mosby Company, 1941.

This edition has added one hundred and twenty pages of important new information including three new chapters, one on peripheral vascular disease, another on military cardiovascular examinations and interpretation and a third on cardiovascular risks in surgery and obstetrics. The number of illustrations has been increased; the three color plates have been retained.

This volume can be heartily recommended for perusal by medical student or general practitioner. It can, however, hardly be referred to any longer as a brief handbook or synopsis intended for the hard pressed medical student or the very busy practitioner. It has grown to be a volume of intermediate size, though all the more valuable as the result, provided the doctor will take the extra time to read it.

It is naturally difficult in such a volume to suit every one's idea of a perfect balance between the various features discussed; for example, between methods of examination on the one hand and the course, diagnosis and treatment of disease on the other. No two persons would agree completely as to what a perfect balance is. The book seems to be overweighted a little in favor of details of methods of examination. A few subjects might well be amplified somewhat in a later edition, particularly rheumatic heart disease, congenital defects and constrictive pericarditis. In chapter 1 the definition of the diagnosis of heart disease should include evidence of valvular involvement as well as of involvement of the heart muscle, and less emphasis should be placed on the seriousness of the verdict of heart disease.

One of the chief reasons for the need of such volumes by the practitioner of medicine is expressed by the author as follows:

Unfortunately, more uncertainty exists and errors are probably more often made in the diagnosis of diseases of the cardiovascular system than in disorders of any other system. The conscientious practitioner finds himself less confident in matters pertaining to the heart and blood vessels than he is in other fields of medicine. This state of affairs is dependent primarily upon the persistence of a few fundamental misconceptions. The first is that the presence of any one of the so-called cardiac symptoms—namely, shortness of breath, edema and pain—or the presence of any murmur spells heart disease. Secondly, it is just as fallacious to feel that every heart over which no murmurs can be heard is essentially healthy and normal. Thirdly, the idea that every irregularity or disturbance of the heart mechanism indicates myocardial damage is wrong. Fourthly, if the heart rhythm is regular and slow, it does not necessarily follow that the myocardium must be fundamentally sound. The fallacy of such conceptions should be obvious.

With this point of view, and hence in the need of such volumes, the reviewer heartily concurs.

Sammlung psychiatrischer und neurologischer Einzeldarstellungen. Herausgegeben von Prof. Dr. A. Bostroem and Prof. Dr. K. Berlinger. Band XVI: Krankheitsverlauf, Persönlichkeit und Verwandtschaft Schizophrenie und ihre gegenseitigen Beziehungen. Von Dr. M. Bleuler. Paper. Price, 9 marks. Pp. 149, with one illustration. Leipzig: Georg Thieme, 1941.

The writer investigates the correlation between the family predisposition of schizophrenic patients, the course of the disease and the prepsychotic personality with the types of mental disease in relatives. The investigation is based on the histories of 316 schizophrenic patients with family histories of 1,410 relatives. One hundred of these patients, with 2,634 relatives, were studied at the Bloomingdale Hospital in New York. The rest of the patients were studied in the various mental institutions in Switzerland. The author gives the statistical results and finds that schizophrenia is more frequent among the rela-

tives of schizophrenic patients than in the total population. Conditions such as mental deficiency and alcoholism are not encountered more frequently in families of schizophrenic patients than in the general population. When schizophrenia reaches a stationary state, the result is recovery in half of the cases and dementia in the other half. Schizophrenia tends either to have a chronic course or to come in episodes, and the latter is more frequent than the former. In the schizophrenia which tends to run in episodes, only a small minority results in dementia. Most of the patients recover with some degree of defect. The cases which tend to have a chronic course usually terminate in dementia. An investigation of the prepsychotic personalities of the patients showed that one third were definitely odd, peculiar and psychopathic. One fourth of the patients showed no evidence of any maladjustment; another fourth of the patients showed that they were definitely within normal limits. There seems to be no relationship between the severity of the schizophrenic breakdown and the family history. The patients who had unusual personalities had more mentally sick relatives than the patients whose family histories were quite negative. There seems to be a definite relationship between the ages at which the patients break down and the breakdowns of the relatives. There is a much better prognosis for those patients whose prepsychotic personality has been quite normal. Patients with good intelligence have a more favorable prognosis. This is an exhaustive study and the author had the advantage of working in the country, where there is little change in the permanent population and where he had the opportunity of obtaining excellent family histories. Like many such studies, however, it has interesting observations but seems to be no real contribution to the whole problem of heredity in schizophrenia.

Cancer Mortality in the United States. III. Geographic Variation in Recorded Cancer Mortality for Detailed Sites, for an Average of the Years 1930-32. By Mary Gover, Associate Statistician, U. S. Public Health Service. From the Division of Public Health Methods, National Institute of Health. Prepared by direction of the Surgeon General. Federal Security Agency, U. S. Public Health Service. Public Health Bulletin No. 257. Paper. Price, 15 cents. Pp. 81, with 18 illustrations. Washington, D. C.: Supl. of Doc., Government Printing Office, 1940.

A study was made of the geographic variations in cancer mortality in the United States in which rates for specific sites of cancer were computed from unpublished tabulations made available by the Bureau of the Census. All rates are corrected to a standard age distribution; that is, to the age distribution of the total population of the United States as enumerated in 1930. In this manner, differences in the age composition of different sections of the country are eliminated. Also all rates are computed specifically for sex and color. The following findings are presented:

Recorded cancer mortality varies in different sections of the United States. The range of variation in the rate for all cancer for both sexes is from 127 in Rhode Island to 56 per hundred thousand in Arkansas. A high rate for cutaneous cancer among both sexes was found in the South. There was also a high rate in the South for all sites of cancer of the buccal cavity among females and cancer of the pharynx and mouth among males. Cancer of the breast is unusually low in the South, whereas cancer of the uterus is about average. The states of Wisconsin, Minnesota, Iowa, North Dakota and South Dakota constitute an area where the rates for cancer of the uterus are unusually low. Rates for cancer of the stomach and also the total digestive tract are higher in the Northern sections and in the Pacific than in the West South Central and in the South. Cancer of the respiratory organs is relatively high in the Northeast and Pacific sections.

Mortality from cancer is generally lower among Negroes than among the white, but the rate for some of the specific sites are higher for Negroes. Resident mortality rates for all cancer are highest in large cities, lowest in rural areas and intermediate in smaller cities for the country as a whole and for each of six geographic sections. For each site of cancer, except cancer of the buccal cavity for females and cancer of the stomach and of the duodenum and of the skin for both males and females, there is a significant positive correlation between the degree of urbanization in states and the magnitude of the death rate for specific sites of cancer. That is, mortality rates for specific sites of cancer are generally higher in states with a large percentage of the population living in cities. This association between

cancer mortality and urbanization occurs apart from the factor of hospitalization.

Correlation coefficients computed for mortality from cancer of the uterus and the birth rate in the states indicate that there are factors, apparently related to urbanization, which are more closely associated with uterine cancer than is the birth rate.

Cardiac Classics: A Collection of Classic Works on the Heart and Circulation with Comprehensive Biographic Accounts of the Authors. Fifty-Two Contributions by Fifty-One Authors. By Fredrick A. Willis, M.D., M.S. in Med., Chief, Section of Cardiology, The Mayo Clinic, Rochester, and Thomas E. Keys, A.B., M.A., Reference Librarian, The Mayo Clinic. Cloth. Price, \$10. Pp. 858, with illustrations. St. Louis: C. V. Mosby Company, 1941.

The general plan and the nature of the contents of this noteworthy volume are clearly set forth in its title. Beginning with Harvey's *De Motu Cordis*, 1628, as translated by Robert Willis, 1847, and ending with Herrick's account of the clinical features of sudden coronary obstruction, 1912, highly representative classic writings about the heart and circulation have been appropriately and faithfully reprinted, with good accounts of the lives of the authors. All translations into English have been selected or made with special care. As a matter of fact about half of the reprints were published originally in the English language. The typography is excellent. The many illustrations, including the likenesses of the authors represented and title pages of their books, as well as drawings and diagrams, all of great interest, have been reproduced. Near the end is a table of correlation of writings now reprinted with contemporary historical events. This table is interesting of course but of limited significance, because as a rule there is no connection other than coincidence between the writing and the event listed. What other connection was there, for instance, between Withering's first treatise on digitalis in 1785 and the recognition two years before of the independence of the United States, or between the death of Charles Dickens in 1870 and the publication that year by Samuel Wilks on capillary embolism? In the preface and again in their recapitulation of the value of the writings included in the book the editors frankly state that they have been especially interested in productions dealing with "the anatomy and physiology of the heart and circulation, descriptions of disease, pathologic and therapeutic contributions, and the like." Hence fields of cardiology are not all equally well represented. One misses, for instance, the reports by Winge and Heiberg (1869-1872), which established the infectious nature of infectious endocarditis. "It has been impossible," the editors explain, "to include all noteworthy contributions of the past in this volume of *Cardiac Classics*." Does that imply more classics?

Pathology of Rocky Mountain Spotted Fever: I. The Pathology of Rocky Mountain Spotted Fever. II. The Pathologic Histology of Rocky Mountain Spotted Fever in the Rhesus Monkey Macaca mulatta. By R. D. Lille, Senior Surgeon, U. S. Public Health Service. From the Division of Pathology, National Institute of Health. Federal Security Agency, U. S. Public Health Service. National Institute of Health Bulletin No. 177. Paper. Price, 15 cents. Pp. 59, with 36 illustrations. Washington, D. C.: Supt. of Doc., Government Printing Office, 1941.

This booklet is divided into two parts: the pathology of Rocky Mountain spotted fever in human beings and the pathologic histology of Rocky Mountain spotted fever in the rhesus monkey. The first portion closes with the conclusion that there is no essential difference in the lesions of this disease whether it occurs in the Rocky Mountain area or on the eastern seaboard of the United States. In summarizing the disease in rhesus monkeys the author concludes that the lesions in these animals closely imitate those found in the same disease in man. The photomicrographs accompanying both sections are good, and this study constitutes an excellent addition to the knowledge of pathology of Rocky Mountain spotted fever.

History of Pharmacy: A Guide and a Survey. By Edward Kremers, Ph.D., Ph.M., Ph.D., and George Urdang, Ph.G., D.Sc.Nat. Cloth. Price, \$4.50. Pp. 466, with 30 illustrations. Philadelphia, Montreal & London: J. B. Lippincott Company, 1940.

This history of pharmacy is a notable achievement both in history and in pharmacy. As a historical work it is well written, documented and indexed. As for pharmacy it is only the second work of its kind written in this country, but it is difficult to believe that there is anything much better in other sciences. The volume is divided into four parts, the first three tracing

the development of pharmacy as a science and a profession; the last is devoted to the contributions of pharmacists to science and society. More than a hundred additional pages are devoted to the bibliography, chronology, glossary and index. The manner in which this supplementary material is treated makes it one of the conspicuous features. The book is too valuable to warrant emphasis on the few errors. However, the reader should not be told that the regulation of advertising is a function of the Federal Food, Drug and Cosmetic Act, as stated on page 202. Dr. Edward Kremers, the senior author, collected source material for this book during his entire professional life. He established in Madison, Wis., a library of materia pharmaceutica which has been characterized as unique in the United States if not in the entire world. With the full time help of Dr. George Urdang, this source material was percolated, distilled and extracted, the active principles going into the book. On the last page the authors write "The members of the profession may derive pride and confidence from the deeds of their great colleagues." This book may be counted among those deeds, and it will stand as a lasting memorial to Dr. Edward Kremers, whose death was announced as these lines were being written.

Radiology Physics: An Introductory Course for Medical or Premedical Students and for all Radiologists. By John Kellock Robertson, F.R.S.C., Professor of Physics, Queen's University, Kingston, Canada. Cloth. Price, \$3.50. Pp. 270, with 188 illustrations. New York: D. Van Nostrand Company, Inc., 1941.

This volume is primarily a textbook for students intending to specialize in radiology, radiotherapy or physical therapy. Sixteen chapters and an appendix deal with the production of alternating and direct currents, measurement, roentgen ray tubes, roentgen rays, electromagnetic waves, radioactivity, dosage and artificial radioactivity. Several pages of problems assist the student who wishes to refresh himself on the subject of physical phenomena. The author has tried to use as simple mathematics as possible. The specialist, either student or practitioner, in roentgen rays or physical therapy should find this book useful in his library.

X-Ray Therapy of Chronic Arthritis (Including the X-Ray Diagnosis of the Disease). Preliminary Report Based on 100 Patients Treated at Quincy, Illinois. By Karl Goldhamer, M.D., Associate Roentgenologist, St. Mary's Hospital and Quincy X-Ray and Radium Laboratories, Quincy. With a foreword by Harold Swanberg, B.S., M.D., F.A.C.P., Roentgenologist, St. Mary's Hospital and Blessing Hospital, Quincy. Cloth. Price, \$2. Pp. 131, with 26 illustrations. Quincy: Radiologic Review Publishing Co., 1941.

The first seventy pages of this book are devoted to the clinical aspects and pathology of chronic arthritis, roentgen findings in arthritis and the roentgenologic differential diagnosis. The remaining half of the book deals specifically with the history of roentgen therapy for arthritis, the choice of cases for roentgen treatment, case reports and results. The latter part is based on observation and treatment with roentgen rays of 100 patients with chronic arthritis or spondylitis over a period of twenty-one months. The number of cases is therefore not large, and the observation period for a disease of this type is rather short. The authors believe that the results from roentgen treatment have been largely encouraging. Although this method of therapy certainly deserves further study and evaluation, it would seem that the new material contained in this book could better have been published in the form of a preliminary report in a current medical journal.

Studies in the History of Science. By E. A. Spelser et al. University of Pennsylvania Bicentennial Conference. Cloth. Price, \$1.50. Pp. 123, with illustrations. Philadelphia: University of Pennsylvania Press, 1941.

This volume includes eight essays delivered at the University of Pennsylvania Bicentennial Conference. The lectures included are:

Ancient Mesopotamia and the Beginnings of Science. E. A. Spelser.
Some Fundamental Concepts in Ancient Astronomy. Otto E. Neugebauer.

Medicine and Surgery in Ancient Egypt. Hermann Ranke.

Medieval Medicine. Henry E. Sigerist.

The Rise of Modern Scientific Medicine. Richard H. Shryock.

Two Centuries of Surgery. Everts A. Graham.

Logicohistorical Study of Mechanism, Vitalism, Naturalism. Edgar A. Singer.

The Mathematical Way of Thinking. Hermann Weyl.

The nature of the occasion and the reputé of the contributors indicate erudite contributions.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

SNEEZING MECHANISM AND ALLERGY

To the Editor:—A man aged 67 has daily paroxysms of sneezing eight to ten times in succession, violent in character and causing exhaustion. They have continued since early life. Climate, food and season do not appear to have any bearing. He is a moderate smoker, enjoying two or three cigars after dinner. The attack, as a rule, follows the evening meal, usually within a half hour. There is no nasal, sinus or throat abnormality and no hay fever. An attack may follow eating an orange or any food which seems to irritate the throat. Will you outline the physiology of sneezing and the probable causes in this case? Also any comments will be appreciated. William C. Herman, M.D., Cincinnati.

ANSWER.—Sneezing consists of a spasmodic expiration preceded by one or more spasmodic inspirations. The object of the sneezing effort is the removal of irritating substances from the surface of the nasal mucous membrane. The mechanism of sneezing is a complex reflex act and, while there is some difference of opinion on some of its features, one of the common explanations is as follows: Two reflexes are involved, a nasal and a respiratory. The nasal reflex is composed of central cells, located in the medulla; efferent fibers forming the great petrosal nerve, cells of the sphenopalatine ganglion and post-ganglionic fibers, distributed to the nasal glands and blood vessels; and afferent nerves, comprising cutaneous nerves, nasal branches of the trigeminal and the glossopharyngeal. Stimulation of these afferent nerves, the cutaneous by low temperature or drafts, the trigeminal by chemical, mechanical or inflammatory irritations or by allergic edema, results in impulses to the central cells, followed by activity of the efferent fibers to the nasal mucosa, causing a discharge of mucus. Physiologists differ as to whether the initial stimulus or the mucus is responsible for the next part of the mechanism. Whichever it may be, it excites to activity the afferent nerves, which are the nasal branches of the trigeminal nerves. Stimulation of the inspiratory center leads to increased contraction of the inspiratory muscles (through the phrenic and intercostal nerves) and hence there is a greater depth of inspiration and more air in the lungs. The excitation of the expiratory center causes an increase in intrapulmonic pressure due to contraction of the expiratory muscles and the closure of the nasopharynx and mouth, the former by the bulging forward of the posterior wall of the pharynx and the elevation of the membranous portion of the palate. When the increased pressure reaches a certain point, the nasopharynx is forcibly opened and a draft of air is blown through the nasal chamber. The mouth also opens partially at the same time and allows some of the air to be forcibly expelled through that orifice.

From the foregoing it can be seen that a number of pathologic and physiologic conditions may be responsible for the stimulus initiating the sneezing reflex. Since most of the abnormalities and diseases of the nasal structures and throat have been ruled out in this case, and since the patient has had these paroxysms from early childhood, the most likely conclusion is that one is dealing with a case of allergic irritation. The possible causes are many, including inhalants, foods and even sources of intrinsic allergy. The occurrence of the attacks following the evening meal suggest the further possibility that one might be dealing with an instance of food allergy. In any event a thorough allergic study should be made of the patient by the usual methods.

ROENTGENOLOGIC DEMONSTRATION OF DUODENAL ULCER

To the Editor:—Can a duodenal ulcer always be demonstrated by roentgen ray findings? In other words, in the presence of full clinical symptoms extending over a period of many years does a negative roentgen examination in the hands of a supposed expert mean no ulcer? Is the blood found in the stools from a patient with duodenal ulcer always of a "tarry" appearance? Is it possible to have dark red blood appear in the stools in this condition? Paul R. Howard, M.D., El Dorado, Ark.

ANSWER.—Typical ulcer distress is almost diagnostic of active peptic ulcer. Confirmatory roentgenologic evidence of ulcer is directly proportional to the training, skill and competence of the roentgenologist and on his equipment.

The roentgenologic signs of duodenal ulcer are deformity and crater. Deformity is more frequently demonstrated but gives no clue as to whether the lesion is healed or active. Crater demonstration is now recognized as the only roentgenologic evidence of an active ulcer. Templeton, Marcovich and Heinz (Duodenal Ulcer: Value of Roentgenologic Demonstration of Crater, *THE JOURNAL*, Nov. 12, 1938, p. 1807) state that theoretically it should be possible to demonstrate a crater in 100 per cent of cases of active duodenal ulcer but that actually this is not the case. A crater may be filled with food, debris, blood or granulation tissue or the neck of the crater may be occluded by edema. Under such circumstances barium sulfate does not enter the crater and consequently it cannot always be demonstrated. On the other hand, barium lodged between mucosal folds or in a pocket of a deformed duodenal bulb may suggest a crater. Such collections of barium have been termed spurious craters. The ability to demonstrate crater and to differentiate between conditions which may simulate it varies with the skill of the roentgenologist and the technic he uses. The highest degree of success has been reported by those roentgenologists who use fluoroscopic examination combined with compression films made under fluoroscopic control.

Templeton and his co-workers reported the roentgenologic findings in over 850 cases of active duodenal ulcer. Crater was demonstrated in approximately 65 per cent of the cases. In 112 instances a crater was found in an undeformed bulb. It is of interest to note that in some patients with typical ulcer distress in whom there was no evidence of a lesion of the stomach at gastroscopic and roentgenologic examination, the duodenal bulb was termed normal, having no demonstrable deformity or crater. These observations are in agreement with those of other investigators that the failure to demonstrate a typical crater, duodenal deformity or both does not rule out the possibility of an active ulcer. It should be stressed, however, that in the great majority of cases of active duodenal ulcer an expert roentgenologist is able to demonstrate some evidence of ulcer. Dark red blood may be passed by rectum following hemorrhage from a duodenal ulcer. This is usually interpreted to indicate a massive hemorrhage with rapid passage of the blood through the intestinal tract. Unless it is known, however, that no coincidental lesion below the duodenum is present, it is not always certain that the source of bleeding is from the duodenal ulcer.

RESTORATION OF HAIR COLOR

To the Editor:—It has been reported by reliable witnesses that the hair of a certain man became gradually gray to almost white till he reached the age of 48 years. He then became sick and remained so for two years until his death at 50. During the last two years of his life his hair turned gradually gray and black. At the time of death his hair was completely black. Are there any reports in the literature of a similar instance? No satisfactory explanation has been offered so far of the phenomenon of hair graying.

Francesco Ranchese, M.D., Providence, R. I.

ANSWER.—Though the occurrence described is rare, similar cases have been recorded. The earliest discovered is that reported by V. C. Isdell (Case of the Restoration of the Natural Color of Human Hair After Having Been Gray for Several Years, *M. Times & Gaz.* 2:680, 1884) of his father, Dr. James Isdell of Dublin, who in 1861 at the age of 62 had completely gray beard and scalp hair. In 1882 at the time of his death his scalp hair was its natural dark color except for a few gray hairs on the temples. Between these dates he had led a normal life and had had no illnesses.

G. T. Jackson and C. W. McMurtry (*Diseases of the Hair*, Philadelphia, Lea & Febiger, 1912, p. 60) cite a case reported by Dr. Warner. A man with black hair and beard experienced sudden loss of the color from his beard and scalp hair, then during the next five years a return of the color to normal. After a few years the beard and scalp hair suddenly became gray again and then gradually regained their color. This same change occurred a third time within thirty years from the first loss of color. During all this time there was no ill health or use of hair dyes.

G. W. Griffiths (Report of a Case in Which the Hair Turned from White to Black After Exposure to Extreme Cold, *J. from White to Black After Exposure to Extreme Cold, J. Cutan. & Genito-Urin. Dis.* 13:376, 1895) records the case of a fireman aged 65 who had had gray hair for eight years. He had been blond. At a fire he was exposed to severe cold for a long time, an icy wind blowing the spray from a leaky fire hose on him. During this time his scalp was the warmest part of his body, protected by a worsted skull cap under his helmet. Twenty-four hours later his hair turned black.

Fred Wise and M. B. Sulzberger (Acquired Progressive Kinking of the Scalp Hair, Accompanied by Changes in Its Pigmentation, *Arch. Dermat. & Syph.* 25:99 [Jan] 1932)

reported a case in which the hair of the left temporal region became kinky and black, contrasting sharply with his normal light brown, straight hair. Later the same change occurred on the right temporal, the right parietal and the right frontal regions. They call it a late nevoid change, though his attacks of severe pain followed by great tenderness of the scalp and accompanied by diplopia gave reason to suspect disease of the brain. No proof of this was found.

P. Rostock (Seltene Haarpigmentierung nach Roentgenbestrahlung, *Strahlentherapie* 28:800, 1928) cites his case of brain tumor, which was treated by roentgen rays after a trephining had disclosed no evidence of superficial involvement of the brain. Three areas were treated, both parietals and an occipital field. Epilation ensued on each field and the hair that grew on the right parietal and occipital areas was of the normal blond shade; but on the left parietal area the new hair, three months after the last roentgen exposure, was quite dark. Microscopically it was thicker and contained more pigment and more air than the normal hair.

The case of the fireman exposed to cold suggests the experimental work of W. Schultz (Haarmelaninerzeugung bei Albinos innerhalb fünf Minuten unter dem Mikroskop under Weiteres zur kälteschwärzung von Haar, Haut und Auge, *Arch. f. Dermat. u. Syph.* 165:405, 1932), who used newborn Russian albino rabbits, a race which has black noses, feet, ears and tails. They are classified as acromelanotic albinos. If these young animals are kept cool after the hair has been plucked or shaved from a patch of skin, the hair of this area grows in black. At birth the nose, ears, feet and tail are white but, being cooler than the rest of the skin, turn dark. If these parts are plucked and kept warm, white hair grows on them. Schultz says that human beings who have black hair and blue eyes correspond to some degree to these partial albino rabbits.

B. Bloch (Ueber die Entwicklung des Haut und Haarpigmentes beim menschlichen Embryo und über des Erlöschen der Pigmentbildung im ergrauenden Haar (Ursache der Canities), *Arch. f. Dermat. u. Syph.* 135:77, 1921) studied the skin of the scalp of gray haired persons by means of the dopa reaction, which indicates the cells capable of pigment production. He found that pigment producing cells become fewer and fewer as grayness increases and finally disappear. He favors the theory that the dark hair is shed and replaced by one with less pigment producing capacity, until finally all are white.

It is evident that the pigment producing capability of the skin can be temporarily suppressed in certain individuals. It seems probable that ordinary graying of the hair takes place as Bloch suggests, by replacement of the pigmented hair by a white one. Sudden graying, on the other hand, may be due not alone to the entrance of air into the medulla of the hair but also to a chemical bleaching action of toxins due to shock or violent emotion. This would occur more easily in those whose pigment precursors are weak, as in the race of rabbits used by Schultz. The restoration of color may occur in the same type of individuals in which the pigment producing capacity was not destroyed, but only in temporary abeyance.

SULFANILAMIDE AND ANTISERUM FOR DRUG ADDICTION

To the Editor:—In treating drug addicts I have recently discovered that administration of a small amount, say 15 to 20 grains (1 to 1.3 Gm.) daily of sulfanilamide not only prolongs the therapeutic effects and apparently does not increase tolerance but also alleviates the common unpleasant withdrawal symptoms. I should like to know if this experience has ever been corroborated. If this can be established as a clinical fact, the new drug might well be a better remedy than anything we have had for this clinical entity. I hit on this therapeutic measure from the hypothesis that drug addiction is somewhat analogous to bacterial infection, resulting in antibody formation and obeying laws of immunity. If the premise is correct, then immune serum can be used to a greater advantage. By narcotizing and gradually denarcotizing a laboratory animal and killing it at the proper moment, serum may be obtained for the treatment of the addict. I should like to know if experimental medicine similar to the described method has ever been employed.

M.D., Washington.

ANSWER.—The use of sulfanilamide in the detoxication of drug addicts may have value in the alleviation of the withdrawal symptoms during the treatment of drug addicts. Because of the untoward effects of sulfanilamide when administered to patients in poor nutritional condition one would consider it an unsafe drug to give to drug addicts, who, when suffering with strong addiction, are always in a poor nutritional state of health.

Carlo Giffredi (L'immunità artificielle par les alcaloïdes, *Arch. ital. de biol.* 28:402, 1897) produced morphine addiction in 1 dog. The addicted dog serum in doses of 20 to 30 cc. produced a protection of 2 minimal lethal doses in dogs.

Leo Hirschlaff (Ein Heilserum zur Bekämpfung der Morphinumvergiftung und ähnlicher Intoxicationen, *Berl. Klin.*

Wchenschr. 39:1174-1177, 1902) had the same idea as that outlined in the production of an antiserum for the disintoxication of morphine addicts.

Hirschlaff produced addiction to morphine in rabbits and tested the antitoxin contents of the rabbit serum on white mice. Thirteen mice received 1 cc. of normal rabbit serum; twenty-four hours later they were given the minimal lethal dose of morphine and 9 of them died.

One cc. of the habituated serum administered twenty-four hours before giving 3 to 4 minimal lethal doses of morphine protected all of 21 mice from death.

Hirschlaff used the habituated rabbit serum in 5 cc. doses in treating the withdrawal symptoms of 5 morphine addicts. He was of the opinion that their withdrawal symptoms were somewhat reduced.

This type of treatment never became popular because in successful disintoxication of drug addicts there are no withdrawal symptoms or other discomforts.

INTESTINAL AND LIVER FLUKES

To the Editor:—I will be grateful for any information regarding infection with *Fasciolopsis buski* or *Fasciola hepatica*, or any references to recent articles on this subject. Could you give me information on the following questions? Are there any methods aside from the examination of the stool for determining the exact type of parasite? Is there any specific treatment for either of these parasites in human beings? Can infection with these parasites give the picture of a completely nonfunctioning gallbladder by the gallbladder dye test?

Fred M. Anderson, M.D., Carson City, Nev.

ANSWER.—*Fasciolopsis buski*, the large intestinal fluke, has a thickness of approximately 2 mm. and varies in length between 2 and 7.5 cm. and in width between 8 and 20 mm. It has a fairly wide distribution, extending from central China south to Borneo and Sumatra and up into Bengal and Assam. In areas in which it is endemic it is a common parasite of man and pigs, rarely of dogs. Infection is acquired from consuming raw aquatic plants to the underground and aboveground parts of which the fluke, in the encysted larval stage, is attached. The adult worms usually become attached to the mucosa of the duodenum and the proximal portions of the jejunum. Large numbers of these worms may produce intestinal obstruction, but a major symptom is generalized toxemia due to the absorption of by-products of the worms. *Fasciola hepatica*, the common sheep liver fluke, has a fairly cosmopolitan distribution throughout the moist and irrigated areas of the world wherever sheep are raised. It is a large, relatively flat, leaflike worm measuring up to 30 mm. in length by 13 mm. in breadth. Apparently all mammals which consume raw aquatic vegetation to which the encysted larval stage is attached are susceptible to infection. Although there have been several hundred cases of human infection reported in South America, the West Indies, southern and southeastern Europe, northern Africa, the Near East, Russia and China, and although sheep in the southern and western parts of the United States are infected, endemic infection in human beings has not been found in the United States. The young worms migrate through the hepatic parenchyma to the larger bile ducts and the gallbladder, in which they mature. Damage produced by this worm is both traumatic (i. e., "liver rot"), because of the migration of the immature worms, and toxic.

The eggs of the two species of worms are large, transparent, gray ovoid objects and possess a minute operculum (cap) at one end. They are extremely difficult to distinguish one from another on the basis of structure and look identical when passed in feces or removed by duodenal aspiration. However, if biliary aspiration is undertaken, eggs present in B bile would undoubtedly be those of *Fasciola*. This constitutes the only certain ready method of pretreatment diagnosis outside of areas in which one or the other of the two species of worms is known to be exclusively endemic.

There is a specific treatment for infection with *Fasciolopsis*. Originally betanaphthol was prescribed and was administered in the amount of 0.2 Gm. in each of two divided doses. A decade and a half ago carbon tetrachloride, administered as in hookworm disease, came into use and was found to be specific but relatively toxic. In 1937 McCoy and Chu tested caprokol (hexylresorcinol crystals) and found this anthelmintic to be both efficient and relatively nontoxic. For children from 1 to 7 years of age they gave 0.4 Gm. (in 0.2 Gm. hard gelatin capsules) in a single dose on a fasting stomach; children of school age and older persons were given a full gram. They produced 54 per cent cures among 129 cases and a distinctive reduction in the number of worms in an additional 23 per cent of their cases. *Fasciola* has been subjected to a consid-

erable number of drugs, most of which have been inefficient or too toxic for human beings. In 1932 Kouri and Arenas in Cuba published a report on their apparent success with emetine hydrochloride administered intramuscularly in the amount of 0.03 Gm. daily for seventeen to eighteen days. Later reports by Kouri and his colleagues and by Rodriguez-Molina and Hoffman (1938) in Puerto Rico indicated the apparent relative specificity of emetine hydrochloride for *Fasciola*.

It is unlikely that *Fasciolopsis* would produce a picture of disease of the gallbladder. Symptoms or signs recorded for cases of fascioliasis in human beings include hepatic colic, with coughing and vomiting; generalized tympanic abdominal rigidity, with pain on pressure; allergic manifestations; moderate to well defined eosinophilia; irregular fever, and more or less persistent diarrhea. It is conceivable that a large number of liver flukes living in the gallbladder might produce the picture of a "completely nonfunctioning gallbladder." Cases of infection of the type have not been reported in the literature, since human infection, even though clinically important, is usually light in the burden of worms as compared with infection in sheep and other herbivorous animals.

RAPIDLY DEVELOPING DENTAL CARIES

To the Editor:—A white man aged 35 has been visiting his dentist twice a year for a number of years. He had been advised by his dentist that eighteen cavities had developed in his teeth since examination six months before. On questioning, it was found that he was not eating a balanced diet. He was advised in this respect and given dicolcium phosphate with viosterol and cod liver oil and was told to drink a quart of milk a day. His blood calcium level was reported to be 7.8 mg. per hundred cubic centimeters by a reliable laboratory; on Dec. 28, 1938, the level was 8.2 mg. per hundred cubic centimeters and on May 25 it was 8.8 mg. per hundred cubic centimeters. He was also given decholin. In February 1941 he again visited his dentist who advised him that twenty-one additional cavities had appeared since the last examination. Physical examination of this person shows him to be apparently otherwise normal. Any suggestion that you can offer concerning treatment will be greatly appreciated.

M.D., Florida.

ANSWER.—Caries is a bacterial disease which depends largely on local oral factors such as accumulation of food debris, enzymes which promote or inhibit bacterial action, the character of food in so far as it is fermentable or promotes bacterial activity, and the saliva. The role of systemic factors in the production of caries is not understood. Systemic therapy has therefore not been scientifically established. The lowered calcium level of the patient's blood calls for diagnosis and treatment. While a low calcium level may conceivably affect the buffer action of saliva, it is not likely that it is related to the high susceptibility to caries. Disturbances in calcium metabolism have not been shown to be significant in caries. Treatment, therefore, should consist of the removal of the carious lesions and the restoration of the lost portions.

Unfortunately, treatment other than dental restorations is not known. It is important that free fermentable carbohydrates be eliminated from the patient's diet and that oral hygiene be followed.

IMMUNIZATION OF AN INFANT WITH ECZEMA

To the Editor:—An infant aged 6½ months has had eczema since he was 2 months of age, despite different diets and treatments. For the past six weeks he has received sobee and water and synthetic vitamins D, C and B only, with no apparent change. The condition almost clears up at times, but always recurs; otherwise he is in good health. Would it be safe to begin immunizing him against whooping cough, diphtheria and scarlet fever? Are many infants given tetanus toxoid with the diphtheria toxoid? Is the procedure safe for a baby with eczema or other allergy? Many physicians no longer immunize children against scarlet fever, so sulfonilamide takes care of the infection quickly. What do you think?

M.D., Illinois.

ANSWER.—If the child's general condition is good there is no objection, despite the presence of eczema, to active immunization for whooping cough, diphtheria and tetanus. It is probably wisest to start the immunization procedures for whooping cough first. If the local reactions are severe or if general reactions occur (fever, malaise), the dose with each injection may be halved and the number of weekly injections increased. It is advisable, with allergic children especially, to wait until all induration at the site of the previous injection has disappeared before another injection is given. A rest period of at least several months should be given before starting immunization with combined diphtheria and tetanus toxoids. Here again it may be advisable to decrease the amount given with each dose and increase the number of injections.

Many pediatricians do not consider immunization for scarlet fever advisable, except for those who are subject to frequent

exposures (nurses, physicians in hospitals for contagious diseases). The reactions observed in scarlet fever immunization are apt to be severe. In a brochure issued as a "Report of the Committee on Immunization and Therapeutic Procedures for Acute Infectious Diseases of the American Academy of Pediatrics" (page 17), the following statement is made: "Most of the committee feel that scarlet fever immunization cannot be put in the same class with diphtheria immunization."

DERMATITIS AND DUOCO PRODUCTS

To the Editor:—I should like to have some information or references on the subject of industrial dermatitis due to Duco.

R. F. Mueller, M.D., Two Harbors, Minn.

ANSWER.—Duco is the trade name given by DuPont to a series of products which include cleaners, putties, furniture lacquers, linoleum finishes, lacquer thinners, household cement, automobile lacquers, sign finishes and stencil pastes. The Duco lacquers are pyroxylin base finishes containing pigment. Pyroxylin consists of either cellulose nitrate or cellulose acetate combined with camphor and plasticizers such as trieresyl, dibutylphthalate and the like dissolved in a combination of solvents, such as the esters mixed with various alcohols, petroleum and coal tar derivatives. In order to determine the ingredients going into the Duco which caused the dermatitis, one would have to know the exact name of the product as printed on the container. Dermatitis from paints, varnishes and lacquers is usually caused by the volatile solvent or thinner if the dermatitis occurs from handling the wet product; but if the dermatitis occurs from handling the hard, dry paint or lacquer, then the plasticizers or the dyes are usually at fault, just as dermatitis of the face caused by nail polishes is due to hypersensitivity to the dye or plasticizer used in the nail polish and not to the solvent, which has completely evaporated from the nails.

SWEEPING IN AURICULAR FIBRILLATION

To the Editor:—A patient aged 70 with chronic auricular fibrillation complains of uninterrupted night sweats of a drenching nature. I have been unable to control them. Atropine and vitamin concentrates in large doses have failed. Will you advise me of any remedy which will stop this annoying and debilitating process?

M.D., Pennsylvania.

ANSWER.—The relief of this distressing symptom has never been easy. Even the exact mechanism involved in this type of sweating is not well understood. It is assumed that there is a certain atony of the sweating mechanism due to debilitated states. Hence the fundamental treatment is improvement of the general physical condition. Vitamin concentrates will tend to do this. Aminoacetic acid might be helpful.

Atropine is usually the best of all the remedies recommended for patients with auricular fibrillation and sweating. Tellurium enjoyed a vogue some years ago and was said to be as useful as atropine. It was abandoned, apparently because of the garlic odor that it imparts to the breath. Strangely enough, pilocarpine in subtherapeutic doses has been recommended in cases in which atropine fails. The dose should not exceed ½ grain (0.003 Gm.) hypodermically, and even this must be used with care for a patient with chronic heart disease. The presence of auricular fibrillation suggests that the patient may be receiving digitalis. If so, omission of the digitalis might have a beneficial effect on the sweating.

RECTAL DILATORS

To the Editor:—What are the indications for using rectal dilators for mild hemorrhoids? How and when should they be used? Should they be used before or after defecation? Should use be restricted to the smallest size hemoroid or to larger size? Should use be continued as long as it is effective, then taking a larger size, or should one use another throughout the series be used from the beginning? Manufacturers state that they should be used on the direction of a physician, but the textbooks fail to direct the physician, either ignoring the subject altogether or merely stating briefly that they may sometimes be useful.

M.D., Texas.

ANSWER.—Rectal dilators are not of much help in the care of mild hemorrhoids. The only important thing that should be observed is absence of strain at bowel movement and immediate reduction of the protrusion into the rectum following bowel movements. If a dilator is used it would only be to accomplish the purpose of pressing the blood out of the various coarcted veins, and the small dilator is just as effective for this purpose as a large one. The rectum cannot be dilated beyond its physiologic normal size without causing severe pain, and therefore rectal dilators are not used for this purpose in the treatment of hemorrhoids.

